THE IRON TRADE REVIEW

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FAIR ORDERS

ARE BEING RECEIVED BY THE STEEL MILLS

And Prices, as a Rule, Are Being Maintained—Pig Iron Market Dull and Prices Declining—Some Ore Reservations.

A very comfortable amount of new business is being received by the steel mills, and prices are for the most part being well maintained. At Chicago, the leading interest received well distributed orders amounting to 32,000 tons, the largest amount for any week in the past 18 months. Buyers of all kinds of machinery are urging reductions of prices, and some manufacturers are yielding to the pressure. Some very low prices are being made on fabricated steel, but the price of the plain material seems to be maintained. The closing of some plants having high production costs seems inevitable. The eastern district of the Amalgamated Association has declined to accept wage reductions and strikes may result.

Iron Ore Reservations

Although no additional orders for iron ore have been placed, some of the important consumers have made reservations with the understanding that orders will be placed as soon as prices are announced, and it is estimated that the shipments for the year will exceed, by about 4,000,000 tons, those of last year. Leading ore interests are strongly opposed to any reduction of ore prices. The pig iron market is extremely dull, the only activity being shown in New England, where about 25,000 tons have been purchased. Prices are declining and sales are being made at $11.50 Birmingham for No. 2, while reports of even lower prices for the southern product are current. Northern prices also show weakness. Pig iron stocks in the south and west are rapidly accumulating.

Plates and Shapes

There is considerable activity in structural steel. Among the contracts placed during the week were 8,000 tons for the Northern Pacific and 2,000 tons for the Great Northern, and numerous contracts for new buildings, ranging from 200 to 1,000 tons. The leading interest has taken some very satisfactory orders for plates, including 12,000 tons for three new lake freighters. A contract for standard section steel rails amounted to about 15,000 tons.

Steel Wheel Contracts

The demand for sheets has improved in the west, but there is some shading, especially on the corrugated product. The Carnegie Steel Co. has made a second contract for steel wheels for a Chicago traction interest, which, including a previous contract, calls for about 30,000 wheels. The same company has also contracted with the Pennsylvania railroad for 10,000 steel wheels.

Tin Plate and Pipe

The reduction of $5 per ton on tin plate came as a surprise to the trade, in view of the fact that considerable business had already been done at the old prices. It seems probable that the contract for 45,000 tons of cast iron pipe for San Francisco will be awarded to the United States Cast Iron Pipe & Foundry Co., the only American bidder, although some foreigners are endeavoring to have their propositions considered.

Iron and Steel Bars

Specifications on steel bar contracts are improving, and the price of 1.20c Pittsburg is being adhered to. Bar iron is dull, and prices are very irregular, as low as 1.35c being quoted at New York and Chicago. No change has been made in prices of wire products, and sales are not large.

Coke and Old Material

A furnace interest has contracted for 75,000 tons of coke for six months' requirements, beginning with April, and a Northern Ohio furnace is in the market for its second half requirements. The old material market continues to drag, and prices are weak.

TARIFF REDUCTIONS

As Embodied in Bill Presented by Chairman Payne.

(Special Telegram.)

Washington, March 17.—The proposed tariff bill, embodying reductions of varying importance, on the iron and steel schedule of the Dingley tariff law, was reported to the national house of representatives by Chairman Payne, of the ways and means committee, at noon, today. The most important reductions recommended on the ore, iron and steel schedule are as follows:

Iron ore and basic slag placed on the free list; the duty on pig iron reduced from $4 a ton to $2.50; scrap iron and steel from $4 per ton to 50 cents; bar iron from 6/10 cents to 4/10 cents; beams, girders, angles, etc., reduced from 5/10 to 3/10 cents; steel rails from $7 a ton to $3.50; wire nails, not lighter than 16 gage, ½ to ¼ cent; lighter than 16 gage, one to ½ cent; steel ingots, slabs, etc., 3/10 to 7/40 cent when of value under 15 cents a pound, and when of value over 15 cents a pound the duty shall be 15 per cent ad valorem; cast iron pipe reduced from 4/10 to ¼ cent.

STRIKES MAY RESULT.

(Special Telegram.)

Pittsburg, March 17.—The eastern district of the Amalgamated Association, at a meeting held at Reading, Pa., at which ten plants were represented, decided not to accept the reduction of 16 2/3 per cent in the boiling rate, making the rate $3.75 per ton, and 5 to 15 per cent in the finishing schedules, effective March 27. It is probable that strikes will be declared unless an agreement is soon reached.

THE WEEK IN IRON CENTERS

PITTSBURG.

Conditions More Settled, but Buyers are Still Very Cautious.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., March 16.

With reductions and adjustment made in all finished and semi-finished material, excepting only wire products and rails, the iron and steel trade is settling back to a more orderly movement and is now making some headway after a month of disturbing developments. While in some lines there remains the expectation of further concessions, the belief appears to be gaining ground among buyers that prices generally have closely approached bottom and as a result, sentiment is becoming more favorable. At the same time caution continues to dominate the making of future obligations.

A fair amount of tonnage against running contracts is being brought out regularly and some undertakings which had been well advanced, but were deferred through anticipation of lower prices, are now being placed in the final stages of development. This effect has been best shown in a livelier structural situation, in which the influence of the season has also played an important part, and better orders for the mills in plates and shapes. In bona fide new business, however, with the new prices as a stimulating factor, orders have not been noticeable, largely, it is believed, by reason of the brief time elapsed since the declaration of the open market.

The action of the tin plate makers in the week in reducing their product $5 a ton, was somewhat surprising owing to the deepness of the cut and to the fact that much business had already been booked at the higher prices. In anticipation of a fuller season's demand for this material, the principal maker of tin plate is placing some of its idle mills in readiness for resumption.

Iron and steel makers are now giving considerable attention to the problem of wage adjustment which has been raised by the desire to arrange production costs in line with present price conditions. Generally the disposition among Pittsburg manufacturers is to await a more accurate knowledge of the tariff revisions likely to be made, before passing final judgment upon this question. The commonly-accepted opinion is that some adjustment is inevitable.

Pig Iron.—A market rendered soft by several weeks of practical stagnation, with no definite prospects of improvement soon, represents the present situation in pig iron. There is an utter absence of sales of significance and the inquiry is not promising. Buyers' needs are so covered apparently that they are willing to let the market drift regardless of the attractiveness of its low level.

The Westinghouse Air Brake Co. has closed on its inquiry for about 1,000 tons of off-Bessemer high in phosphorus and low in silicon at a price approximating $15.50 delivered, or $14.60 valley. The metal is for delivery within the first half. Malleable is quoted at from $14.75 to $15 valley, standard Bessemer at from $15.25 to $15.50 valley, basic at $15 valley, and No. 2 foundry at from $14.75 to $15 valley. These prices are largely nominal and could probably be shaded, although any considerable buying movement would likely harden them owing to their low stage. A sale of 100 tons of No. 3 foundry is reported at less than $15 delivered Pittsburg. Some basic inquiry is out from St. Louis and a large western buyer is asking prices on its third and fourth quarter requirements.

There has been some buying of low phosphorus iron in this territory at prices around $21 delivered, eastern furnaces taking the business.

The southern market is likewise in a very dull state and sales are extremely light. The market is generally regarded as $12 Birmingham on No. 2.

For prompt and second quarter delivery on northern iron, we quote as follows:

Bessemer, valley	$15.25 to 15.50
Bessemer, Pittsburg	16.15 to 16.40
No. 2 foundry, Pittsburg	15.65 to 15.90
Gray forge, Pittsburg	14.90 to 15.00
Basic, valley	15.00 to 15.25
Basic, Pittsburg	15.90 to 16.15

Ferro-Alloys.—A light inquiry and but few small sales are going in ferro-alloys. There has been some carload inquiry and an occasional sale of the lower grades of ferro-silicon. The market is not firm. We quote 80 per cent ferro-manganese at $42 to $43 Baltimore, with a freight rate of $1.95 to Pittsburg.

Imported 50 per cent ferro-silicon is quoted at $61.50 to $62 Pittsburg on forward deliveries; domestic 12 per cent, $26; 11 per cent, $25; 10 per cent, $24, Pittsburg. Foreign ferro-silicon is above domestic.

Plates.—The Carnegie Steel Co. has booked an order for 12,000 tons of plates and shapes for three new large lake freighters which have just been contracted for from the American Ship Building Co. Few car orders are being placed, but some large blocks are under advisement, particularly that by the Baltimore & Ohio railroad. The Wabash-Pittsburg Terminal railroad is in the market for 500 steel hopper cars of 100,000 pounds capacity each, the court order having been given the receivers authorizing such purchase. Some companies are receiving better specifications against standing contracts, but new business is not showing much increase. The 1.30c price on plates is fairly well held. We quote the present plate market as follows:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.30c f. o. b. mill. Extras are as follows per 100 pounds: Boiler and flange steel plate, 0.10c; A. B. M. A. and ordinary fire box steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive fire box steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 110 inches up to 115 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—On attractive business in certain grades of sheets, the price schedule of the independents is being considerably shaded by some interests which are aggressive for orders. A lot of 125 tons, largely of the corrugated product for the new plant of the West Penn Steel Co. in this district, was closed this week, and brought out a price exceeding $2 a ton under the standing schedule. Orders to the leading interest are coming in well and some of its idle mills are resuming. This week it has 50 per cent or 93 of its 186 sheet mills in operation, compared with 46 per cent last week and 40 per cent the preceding week. The activity of the independents is being somewhat curtailed. The price schedule on carloads which represents the views of the independents is as follows:

Black sheets, Nos. 13 and 14, 2c; Nos. 15 and 16, 2.05c; Nos. 17 to 21, 2.10c; Nos. 22 to 24, 2.15c; Nos. 25 and 26, 2.20c; No. 27, 2.25c; No. 28, 2.30c; No. 29, 2.35c; No. 30, 2.45c; galvanized sheets, Nos. 13 and 14, 2.35c; Nos. 15 and 16, 2.45c; Nos. 17 to 21,

2.55c; Nos. 22 to 24, 2.70c; Nos. 25 and 26, 2.90c; No. 27, 3.10c; No. 28, 3.30c; No. 29, 3.40c; No. 30, 3.65c; painted roofing, $1.65 per square for No. 28 gage, 2½-inch corrugation, and galvanized roofing, $2.90 per square for No. 28 gage, 2½-inch corrugation.

Tin Plate.—The extent of the $5 reduction in tin and terne plate which came rather abruptly during the past week exceeded the expectations of those who believed a cut in these products was inevitable. As much of the season's trade had already been booked, no new business of consequence has been brought out, but greater activity is expected. Makers generally have adjusted their schedules at the new level. The American Sheet & Tin Plate Co. has ordered its Greer plant at New Castle of 20 mills to be made ready for operation, and activity will be resumed at this works in a very short time. The New Castle plant has not been operated for about nine months. The leading interest this week is running 68 per cent of its capacity. We quote the present market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.45 f. o. b. mill Pittsburg district and $3.40 in large lots. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—Beyond a steady demand for light rails and some small orders in standard sections, new business in the rail market is inconsiderable. The light rail bookings of the local maker during the past week were about 2,000 tons, and some small orders in standard rails up to 500 tons were also taken. The 9,000 tons for the Pittsburg & Lake Erie railroad are now being rolled by the Carnegie Steel Co., but beyond this, no specifications against the recent New York Central contract have been received. Operations among the rerollers are still light. The spike market is fairly well settled at former prices. On present specifications on Bessemer rails, we quote as follows, the base price for open-hearth rails being $30 mill:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $32; 12-pound, $28; 16-pound, $26; 20-pound, $25; 25 to 45-pound, $24; angle splice bars for standard sections, 1.50c. Standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

Steel.—There are no developments of note in the semi-finished steel situation, and the prices of $23 Pittsburg on billets and $25 Pittsburg on sheet bars still represent the market, although new business is so light that these figures have not been fairly tested. Specifications against billet and sheet bar contracts are being received in regular tonnage.

Bessemer and open-hearth 4 x 4 billets with 0.25 carbon and less are quoted at $23 Pittsburg with the usual extras for size and analysis, and forging billets at $25 Pittsburg. Sheet and tin bars are $25 Pittsburg. Some steel makers are still willing to divide the freight within the $1 limit, making the price in the immediate Pittsburg territory $23.50 delivered on billets and $25.50 delivered on sheet bars.

Hoops and Bands.—Some hoop contracts which have been expiring are being renewed at the current prices and specifications are now coming to the mills in better volume. Some unspecified contracts were extended at the first of the year, so that consumers generally are now well covered. We quote present prices as follows:

Hoops in carload lots, 1.60c; in less than carload lots, 1.70c; bands, 1.20c, base half extras as per standard steel.

Merchant Bars.—Steel bar specifications which increased following the establishment of the 1.20c level are holding up well, and a fair gain in tonnage is being sustained. The implement consumers are ordering consistently. Despite reports to the contrary, particularly in Chicago territory, the 1.20c price seems to be reasonably firm on straight steel bar business. The 1.40c Pittsburg price on bar iron is purely nominal, as not enough business is going to test its strength. The Chicago market is not firm, and 1.35c there has been done. Bar iron makers are acting more independently of each other than they have in times past. New discounts on shafting of 60 on carloads and 55 on less than carloads in base territory have been announced, but this is merely an official recognition of the shading of the former level of 57 and 52 which had prevailed for a long time. Other products on the shafting schedule have been reduced $3 a ton, and polished screw stock now stands at 2.30c Pittsburg. We quote present prices as follows:

Common iron bars, 1.40c Pittsburg. Bessemer and open-hearth steel bars, 1.29c; plow and cultivator, 1.20c; channels, angles, zees, tees under 3-inch, 1.30c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 60 per cent in carloads, and 55 per cent in less than carloads, delivered in base territory. Planished and machine straightened tire steel is 1.40c base; iron finished tire under 1½ by 1½ inches, 1.35c, both plus ½ extra on tire card; iron finished tire, 1½ by ½ and over, 1.20c, plus ½ extra on the steel bar card.

On cold rolled strip steel, width 1½ inches and wider, and 0.100 inch and thicker, we quote base prices for 100 pounds, $3.05 on hard, and $3.30 on soft.

Structural Material.—The inquiry in structural lines has been more active during the past several weeks, and much of this has been due to the livelier interest being shown by the railroads. While much new work has not been stimulated by the lower prices of structural material, many of the projects which have been under contemplation are no longer being held back, and this is giving the market a better tone. Low fabricating prices are still the rule. The New York Central lines are reported to be considering the placing of a large tonnage in bridge and viaduct work soon. The Riter-Conley Mfg. Co. has taken the new buildings for the De-Forest Sheet Steel Co. at Niles, O., which will require about 800 tons. The Pennsylvania lines west have awarded 1,000 tons to the McClintic-Marshall Construction Co. for track elevation work in Chicago. The Baltimore Bridge Co. has taken the state tobacco warehouse, Baltimore, 1,000 tons. Jas. L. Stuart, Pittsburg, has taken the general contract for a second building of the University of Pittsburg, and the John Eichleay Jr. Co., Pittsburg, will fabricate and erect the 480 tons required. Bids have been taken by the government for 350 tons for lock No. 5 in the Monongahela river at Brownsville, Pa. A new office building by the Standard Steel Car Co. at Butler, Pa., will require a small tonnage. The Onondaga hotel, Syracuse, N. Y., 1,900 tons, is to be refigured. We quote the present market on structural shapes as follows:

Beams and channels, 15-inch and under, 1.30c; over 15 inches, 1.40c; zees, 1.30c; tees, 1.35c; angles from 3 to 6 inches, 1.30c; over 6 inches, 1.40c; universal and sheared plates, 6¼ inches and wider, 1.30c base.

Merchant Pipe.—The jobbing trade has been advised that no rebates will be allowed by the manufacturers on stock shipped during the 30 days prior to the declaration of the open market on Feb. 19, when the cut of $8 to $10 a ton on merchant pipe was put into effect. Line projects involving hundreds of miles of large pipe are being steadily developed, and much of this business is expected to reach the market before

many days. The Kansas Natural Gas Co. has decided upon the construction of a line of 16-inch pipe and 60 miles in length in Kansas and Missouri territory. This order is expected to be placed soon. There is a little better call for merchant pipe from the jobbers, as their needs are increasing with the more settled condition of the market. Present pipe prices are reported to be absolutely firm. We quote the following official discounts on merchant pipe subject to five off to jobbers, while a few of the very large jobbers with mill connections are given an additional one point off:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch.....	72	56	69	..
⅜ inch	73	59	70	56
½ inch	76	64	73	61
¾ to 6 inch.....	80	70	77	67
7 to 12 inch.....	75	60	72	57
PLUGGED AND REAMED.				
1 to 4 inch.....	78	68	75	65
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch.....	65	53	62	50
½ to 4 inch.....	72	60	59	57
4½ to 8 inch.....	68	56	65	53
DOUBLE EXTRA STRONG PLAIN ENDS.				
½ to 8 inch.....	61	50	58	47

Boiler Tubes.—Charcoal iron tube makers have fixed upon their schedule of discounts which show reductions of from $6 to $10 a ton over the former figures. The demand for locomotive tubes has increased moderately, and jobbers are also a little more active in merchant tubes, although the situation generally remains one of light trade. We quote the following official discounts on lap-weld steel boiler tubes to jobbers in carloads:

1 to 1½ inch	50
1¾ to 2¼ inch	62
2½ inch	64
2¾ to 5 inch	70
6 to 13 inch	62

2½ inch and smaller, over 18 feet, 10 per cent net extra.
2¾ inch and larger, over 22 feet, 10 per cent net extra.
To destinations east of the Mississippi river will be sold at delivered discount for carloads lowered by two points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg.

We quote the following discounts on charcoal iron tubes to jobbers:

1 to 1½ inch	45
1¾ to 2¼ inch	45
2½ inch	50
2¾ to 5 inch	57
6 to 13 inch	45

Wire Products.—The former schedule of prices in wire products is still being presented to the trade by makers, but as this line is the only one that has not developed reductions as yet, concessions are awaited by buyers. As a result, consumers are disposed to proceed cautiously with their orders, despite the fact that the active season is now at hand. Just when any readjustment in the market is to be made, if there is to be any, is not indicated by current conditions. We continue to quote the present market as follows:

Wire nails, jobbers' carload lots, $1.95; retailers' carload lots, $2; painted barb wire, jobbers' carload lots, $2.10; retailers' carload lots, $2.15, with 30c for galvanizing; plain wire to jobbers in carloads, 1.80c, and to retailers in carloads, 1.85c.

Wire Rods.—The market in wire rods is still unsettled and the nominal prices of $33 Pittsburg on Bessemer and $34 Pittsburg on open-hearth rods still prevail. There is very little business being booked.

Coke.—A northern Ohio furnace interest is in the market for its requirements of furnace coke of 200 tons daily over the last half, or an aggregate of from 30,000 to 40,000 tons. Reports are current that extremely low prices are being made on furnace coke, but these, when investigated, usually develop the off-grade quality of the material furnished, or transactions made under pressure. Very few contracts are being made in coke, and the market is not active, although there is good specifying for foundry coke in certain sections, notably New England. It is reported that the number of cars at the ovens on track have decreased during the past week. We quote spot furnace coke at $1.50 to $1.75 ovens and on contract from $1.75 to $1.90 ovens. For first-class Connellsville foundry coke the range is from $2 to $2.25 ovens, the former price applying to spot shipment. The *Courier's* figures for the week ending March 6 show 23,218 ovens active with an output of 260,987 tons, compared with 24,044 active ovens and a production of 268,852 tons the previous week.

Old Material.—The old material market continues practically nominal, as buying activity is very slight and low prices do not appear attractive to consumers. Lower prices are generally expected and iron and steel mill users are playing the waiting game on this account. The statement is made that not over $14 would be offered for heavy steel. Quotations have sagged further in the week, but generally the market is indefinite. Some dealers are still holding to their stocks, refusing to consider present prices. We quote gross tons, delivered in the Pittsburg district, as follows:

Heavy melting scrap, $14 to $14.50; re-rolling rails, $15 to $15.50; bundled sheet scrap, $11.50 to $12; iron axles, $19.50 to $20.50; old iron rails, $16 to $16.50; No. 1 wrought scrap, $14 to $14.50; old car wheels, $15 to $15.50; low phosphorus, $16.75 to $17.25; machine shop turnings, $10 to $10.50; cast borings, $8 to $8.50; No. 1 cast scrap, $14 to $14.50; malleable, $14 to $14.50; stove plate, $11 to $11.50.

CHICAGO.

Heavy Specifications of Leading Interest—Some Very Low Prices.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, March 16.

The Chicago market may be characterized even in seasons of good business as a place where the lowest price and a product that will serve the purpose are the best selling arguments. In keeping with this general trade disposition, especially pronounced at present, a wave of low prices for manufactured and fabricated products has been developed by the necessities of competitive selling which is of much greater interest to the ultimate consumer than the matter of mill prices, now fairly well established. All classes of articles manufactured from iron and steel raw materials are being subjected to considerable pressure and some of the prices that are being quoted seem possible of explanation only from the standpoint of the financial necessity for operating plants. For fabricated steel the lowest prices made in several years are now prevailing and certain buyers in the last few days are known to have greatly enlarged their contracts for fabricated material because of the low prices being tendered. More than at any previous time, the present period is a buyer's market. It seems difficult to account, therefore, for the limited amount of general trading. The leading interest locally enjoyed last week the best week of specifications recorded in the past year and a half. Over 32,000 tons were received in well distributed orders, none of which was very large. This tonnage compares almost identically with the average week of 1907. The activity of the leading interest does not represent the general condition of the market, however, and with the exception of the local independent steel mill, the mill bookings are very moderate. Pig iron prices are soft and southern iron has sagged sharply.

Pig Iron.—The status of the pig iron market may be classed as delinquent. There is apparent no change in the lack of interest displayed by pig iron consumers and there is little or no improvement in the matter of delayed deliveries. Southern pig iron gave way rather sharply disclosing further weakness and, though few are interested, it is quite possible to buy ordinary tonnages for shipment in the next 60 days at $11.50 Birmingham. Carload lots and other small tonnages

on track for spot shipment bring $12 Birmingham. Just how much of this relapse may be attributed to reasons political and how much to the long continued absence of business can only be conjectured, but the latter cause is almost sufficient reason. Local iron has experienced less of a tryout in the matter of price and such small lots of iron as are changing hands continue to take prices between $16.50 and $17 delivered Chicago. We quote as follows:

Lake Superior charcoal	$19.50 to 20.00
Northern foundry No. 1	17.00 to 17.50
Northern foundry No. 2	16.50 to 17.00
Northern foundry No. 3	16.00 to 16.50
Southern foundry No. 1	16.35 to 16.85
Southern foundry No. 2	15.85 to 16.35
Southern foundry No. 3	15.35 to 15.85
Southern foundry No. 4	14.85 to 15.35
Southern No. 1 soft	16.35 to 16.85
Southern No. 2 soft	15.85 to 16.35
Southern gray forge	14.85 to 15.35
Southern mottled	14.60 to 15.50
Southern silveries, 4 per cent silicon	17.60 to 18.10
Southern silveries, 5 per cent silicon	18.10 to 18.60
Southern silveries, 6 per cent silicon	18.60 to 19.10
Jackson Co. silveries, 6 per cent.	19.40 to 19.90
Jackson Co. silveries, 8 per cent.	20.40 to 20.90
Jackson Co. silveries, 10 per cent	21.40 to 21.90
Malleable Bessemer	16.50 to 17.00
Standard Bessemer	17.40 to 17.90
Alabama basic	16.85 to 17.35

Billets.—There is as little possibility of fixing one price for billets this week as last. The nominal prices are $23 Pittsburg for rolling billets and $25 for forging billets with $3 freight added to Chicago. Inasmuch as one-half the freight was formerly absorbed by the mill, the net reduction on the basis of the above price is now only 50 cents below the former prices. Better than this is being done without question. We quote nominally for Chicago delivery: 4 x 4-inch rolling billets, $26; forging billets, $28.

Merchant Bars.—The tonnage of steel bars being placed is not extensive. One independent interest reports total bar specifications during the first half of March was about 700 tons less than in the same period of February except that in March the second week was larger than the first. The leading interest has been more aggressive and has increased both the tonnage on its books and specifications. Its bookings have been made up of bars largely for purposes other than implement manufacture. The trade in merchant steel has been exceedingly good and one eastern interest reports that shipments to Chicago territory in February comprised the largest tonnage shipped in any month of its history through this branch. The price of shafting has been reduced approximately $3 a ton on base sizes. Bar iron is quiet. We quote as follows:

Bar iron, 1.40c; soft steel bars and bands, 1.38c, half extras; soft steel angles, less than 3 x 3, 1.48c; hoops, 1.78c base, full extras; planished or smooth finished tire steel, 1.58c; iron finish, up to 1½ x ½-inch, 1.53c base tire card; iron finish, 1½ x ½-inch and larger, 1.38c base steel card; channel for solid rubber tire, ¾ to 1 inch, 1.88c and 1⅛-inch and larger, 1.78c; smooth-finished machinery steel, 1.63c; flat sleigh shoe, 1.43c; concave and convex sleigh shoe, 1.63c; cutter shoe, 2.75c; toe calk steel, 1.93c; railway spring, 1.73c, base steel card; vehicle spring steel, 1.78c base vehicle card; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 60 per cent off the list for carload lots, and 55 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.80c to 1.90c, full extras; soft steel bars, 1.60c per 100 pounds base, plus half extras; soft steel hoops, 2.10c full extras.

Plates.—The plate tonnage that was placed during the week was confined very largely to that taken by the leading interest. The orders were very satisfactory and represented material for structural work, boiler shop and jobbers' stocks. While the increase in plate tonnage for structural purposes is very gratifying, it is the renewal of buying by the boiler makers and the jobbers which is most encouraging. The weakness in the situation is the lack of a more general activity. There have been no new developments in regard to prices and we quote as follows for shipments from local stocks. For mill shipments and extras see Pittsburg report. Freight to Chicago, 18 cents:

Tank steel, ¼-inch and heavier, up to 72 inches wide, 1.70 to 1.80c; from 72 inches to 96 inches wide, 1.80c to 1.90c; 3/16-inch up to and including 60 inches wide, 1.80c to 1.85c; 72 inches wide, 2.05c to 2.10c; No. 8, up to 60 inches wide, 1.80c to 1.85c. Flange and head quality, 25c extra.

Sheets.—The volume of western sheet trade has increased to very comfortable proportions. The local sheet mill is filled up to about 95 per cent of capacity. For such mills as buy their sheet bars, the present situation in which sheets have been reduced is unfortunate. A case in point is that of the Atlanta mill in Indiana, which is now shut down. Prices, while nominally as quoted below, are somewhat irregular. For mill prices see Pittsburg report. Freight to Chicago, 18 cents. We quote store prices at Chicago as follows:

Store prices at Chicago: No. 10, 2c to 2.10c; No. 12, 2.05 to 2.15c; No. 14, 2.10c to 2.20c; No. 16, 2.20c to 2.30c; Nos. 18-20, 2.50c to 2.55c; Nos. 22-24, 2.55c to 2.60c; No. 26, 2.60c to 2.65c; No. 27, 2.65c to 2.70c; No. 28, 2.75c to 2.80c; No. 30, 3.05c; galvanized sheets, Nos. 10 to 16, 3c to 3.10c; Nos. 18 to 20, 3.05c to 3.15c; Nos. 22 to 24, 3.20c to 3.25c; No. 26, 3.40c to 3.45c; No. 27, 3.60c to 3.65c; No. 28, 3.80c to 3.90c; No. 30, 4.20c to 4.50c.

Structural Steel.—Probably in no other department of the market is there less uniformity in prices than in connection with fabricated material. At the present writing, the first object among fabricators is the securing of contracts. Necessity in some cases and policy in others has pushed the question of prices into the background. For bridge structurals and other material of a desirable character from the fabricator's standpoint $40 a ton is only an average price for the delivered material. Among the contracts placed in the week were 8,000 tons for the Northern Pacific, 2,000 tons for the Great Northern, 230 tons for the Chicago, Milwaukee & St Paul and 600 tons of tie rods for the Chicago Railways Co., all taken by the American Bridge Co. The Wisconsin Bridge Co. took the contract for 360 tons for the Chicago, Milwaukee & St. Paul. It is expected that the Chicago & Northwestern tonnage and 500 tons for the Fort Worth First National bank, will be let in a few days. For mill prices on structural steel see Pittsburg report. Freight to Chicago, 18 cents. We quote for delivery from local jobbers' stocks as follows:

All angles, 3 inches and larger, including 6 inches, $1.70 per 100 pounds; angles over 6 inches, $1.80 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.70 per 100 pounds, base; channels, 3 inches and larger, $1.70 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—The rail contracts for the week taken by the leading interest amounted to a total of 11,000 tons and included 4,000 tons for the Manistee & Northeastern, 2,500 tons for the Chicago & Alton and 2,000 tons for a southwestern road. Specifications for several thousand kegs of spikes and

bolts were received, but the week was comparatively quiet. For standard sections, see Pittsburg report. We quote as follows:

Light rails, 25-pound to 45-pound, $25; 20-pound, $26; 16-pound, $27; 12-pound, $28. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.15c to 2.20c; with hexagon nuts, 2.30c to 2.40c. Small railroad and square boat spikes, 1.90c base, f. o. b. Chicago.

Merchant Pipe and Boiler Tubes.—The past week developed a material increase in the total tonnage of tubular goods in which interest was displayed. The improvement is hardly up to the estimate of probable business, but the influence of the season is undoubtedly being felt. Some irregularities in prices appear occasionally but no general break in the situation seems at all probable. For mill discounts see Pittsburg report. Freight to Chicago, 18 cents.

Cast Iron Pipe.—Developments in connection with the letting of the 45,000-ton pipe contract at San Francisco indicate that domestic competition is practically limited to the leading interest and to them it seems probable that the contract will be let if the railroads will grant to the city such concessions in the freight rate as will permit of the pipe being bought in this country at all. It is expected that the award will be made next week. The only letting of the present week is 300 tons at Bay City, Mich. We quote as follows: 4-inch water pipe, $28; 6 to 14-inch, $27; larger sizes, $26; gas pipe, $1 a ton higher.

Wire Products.—Despite many reports to the contrary, there is reason to believe that there is no immediate probability of reductions in wire products. While some manufacturers are conceding prices more or less irregular, an effort is undoubtedly being made to preserve the strength of the situation as far as possible and open quotations under the market have been withdrawn. Sales of woven fence wire show material gains and the other products are moving in good volume. We quote as follows:

Wire nails, jobbers' carload lots, $2.13; retailers' carload lots, $2.18; painted barb wire, jobbers' carload lots, $2.28; retailers' carload lots, $2.33, with 30c for galvanizing; plain wire to jobbers in carloads, $1.98, and to retailers in carloads, $2.03. Wire rods, Bessemer, $33; open-hearth, $34; chain rods, $33, f. o. b. Pittsburg.

Old Material.—An inactive week brought out little that is new in the matter of prices. The only matter of general interest was the Santa Fe list, most of which was not sold in this market. The best offer in this market for the 600 tons of car wheels listed is reported as $14, at which price the wheels were not sold. For re-rolling rails, $12.75 was offered. Aside from a light demand for heavy melting steel, consumers are evincing small inclination to buy. We quote as follows gross tons in the first paragraph:

Old car wheels	$14.25 to 14.75
Old iron rails	16.50 to 17.00
Re-rolling rails (4 ft. and over)	12.75 to 13.25
Old steel rails (4 ft. and under)	13.50 to 14.00
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	12.25 to 12.75
Heavy melting steel	12.00 to 12.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.50 to 12.00
No. 2 R. R. wrought	10.50 to 11.00
Knuckles, couplers and springs	11.25 to 11.75
Shafting	15.25 to 15.75
Iron car axles	17.50 to 18.00
Steel car axles	16.25 to 16.75
Dealers' forge No. 1	9.50 to 10.00
Pipes and flues	8.50 to 9.00
No. 1 cast, 150 lbs. and less	11.75 to 12.25
No. 1 mill	7.25 to 7.75
Mixed busheling (Nos. 1 and 2)	7.25 to 7.75
Country sheet	5.00 to 5.50
No. 1 boiler cut	9.00 to 9.50
Boiler punchings	11.00 to 11.50
Cast borings	6.00 to 6.50
Mixed borings, etc	6.00 to 6.50
Machine shop turnings	7.00 to 7.50
Railroad malleable	11.00 to 11.50
Agricultural malleable	10.00 to 11.00
Stove plate and light cast scrap	11.00 to 11.50
Old iron splice bars	14.50 to 15.00

CLEVELAND.

Increase in Ore Shipments Expected —Plates for New Vessels.

Office of THE IRON TRADE REVIEW,
Browning Building, March 16.

Iron Ore.—While it is not expected that shipments from the Lake Superior ore ranges will exceed those of last year for a number of months after the opening of navigation, it is hoped that the closing months of the season will be more active, and it is estimated that about 4,000,000 more tons of ore will be sold and delivered than during the last season when the shipments amounted to 25,414,987 tons. As some increase in demand is expected, ore men do not believe that any sound reason for decreasing prices exists. They are advising blast furnace operators to blow out their stacks rather than operate on a basis which will not be profitable with the present ore prices.

On base ores with the guarantee of 55 per cent. on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range, non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—One interest reports some activity, two others say the market is lifeless. Reports of some very low prices in the valleys are heard, it being understood that iron has sold as low as $14.50 valley for No. 2, and quote delivered in Cleveland, as follows:

No. 1 foundry	$16.00 to 16.50
No. 2 foundry	15.50 to 16.00
No. 3 foundry	15.00 to 15.25
No. 2 southern	15.35 to 15.85
Gray forge	13.75 to 14.00
Bessemer	16.50 to 16.75
Lake Superior charcoal	19.50 to 20.00
Jackson Co. 8 per cent silvery	20.05

Coke.—The Upson Nut Co. is in the market for its second half requirements. We quote spot furnace coke at $1.50 to $1.75 ovens and on contract from $1.75 to $1.90. For first class Connellsville foundry coke for shipment up to the second half, we quote from $2.00 to $2.25.

Finished Material.—The principal transaction of the week was the sale by the Carnegie Steel Co. to the American Shipbuilding Co. of from 11,000 to 12,000 tons of shapes and plates for three new freighters, the price being 1.30c Pittsburg. The contract for the steel for the building of the Brotherhood of Locomotive Engineers, about 2,500 tons, has not yet been placed by the King Bridge Co., which has tried in vain for more than two weeks to obtain a quotation of less than 1.30c Pittsburg. This building will require about 1,100 tons of sheet piling for the foundation. Bar iron continues dull and prices are irregular, the mills realizing about 1.30c at their plants. The Empire has resumed, but its time of operation is uncertain. Mills report a very good run of orders on steel bars and other finished lines. Recently announced steel prices are being well maintained. Jobbers report that their business is dull.

Old Material.—Continued dullness characterizes the market, local mills refraining from purchasing material in quantity. Another marking down of prices ranging from 50 cents to $1.00 a ton has taken place. The weakness of the market has probably been influenced somewhat by the presence of 20,000 tons of material in yards within a few miles of shipment of Cleveland. Future developments as to prices will depend to a large extent on whether the railroads sell or hold their present accumulations. We quote, largely nominally, f. o. b. Cleveland, as follows:

Old iron rails	$16.00 to 16.50
Old steel rails (re-rolling)	14.00 to 14.50
Old steel rails (under 6 feet)	14.00 to 14.50
Old car wheels	14.50 to 15.00

Old steel boiler plate	11.00 to 11.50
Malleable iron (railroad)	13.50 to 14.00
Steel axles	17.50 to 18.00
Malleable iron (agricultural)	12.00 to 12.50
Heavy steel	12.50 to 13.00
Country mixed steel	11.00 to 11.50
Low phosphorus	16.00 to 16.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$13.50 to 14.00
No. 1 busheling	10.50 to 11.00
No. 1 machine cast	12.50 to 13.00
Iron axles	17.00 to 17.50
Axle turnings	9.50 to 10.00
Machine shop turnings	7.50 to 8.00
Grate bars	11.00 to 11.50
Pipes and flues	10.50 to 11.00
Tank iron	9.00 to 9.50
Hoop and band iron	7.00 to 7.50
Sheet iron	5.50 to 6.00
Wrought drillings	7.50 to 8.00
Stove plate	11.00 to 11.50
Cast borings	6.00 to 6.50

CINCINNATI.

Pig Iron Prices Low and Market is Very Dull.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., March 16.

Pig Iron.—The market continues dull and prices have made a further decline. Southern iron has been sold during the week at $11.50 Birmingham, and it is reported that this price has been made by at least two furnace companies. Inquiry is light and the market is exceedingly dull. A maker of agricultural implements in Indiana is entertaining propositions on from 1,500 to 2,000 tons of northern No. 2 foundry, for second and third quarter delivery. Another melter has offered to buy a liberal tonnage of northern at $13.50 at furnace and an equal tonnage of southern at $11.10 Birmingham for last half delivery, but there are no takers. Some buyers have advised the sales agencies that they are willing to make some purchases at $11 Birmingham and have practically given the sales agents authority to enter their order if the market reaches that point. Northern iron continues quotable at $14.50 for No. 2 foundry at furnace, but the market is regarded as easy at that quotation. Efforts to sell pig iron appear to result in confirmation of the general belief that melters are so well covered for the first half of the year that it becomes difficult to interest them. No. 3 foundry southern has been freely offered during the week at $11 Birmingham, but has not sold freely in spite of the fact that it ought to look cheap. The trade seems to have the idea that the market will touch $11 Birmingham before buying will commence, and even though the market should recede another 50 cents on southern iron, unless furnace books are opened for the last half of the year on this basis, it is not at all clear that a large tonnage could be sold, as the iron due on old contracts for second quarter delivery would be in the way of placing new business. We quote for prompt delivery, delivered Cincinnati, based on freight rates of $3.25 from Birmingham, and $1.20 from Ironton, as follows:

Southern foundry No. 1	$15.25 to 15.75
Southern foundry No. 2	14.75 to 15.25
Southern foundry No. 3	14.25 to 14.75
Southern foundry No. 4	13.75 to 14.25
Southern No. 1 soft	15.25 to 15.75
Southern No. 2 soft	14.75 to 15.25
Southern gray forge	13.25 to 13.50
Northern No. 1 foundry	16.20 to 16.70
Northern No. 2 foundry	15.70 to 16.20
Northern No. 3 foundry	15.20 to 15.70
Northern 8 per cent silicon	19.70

Finished Material.—The market continues to show more life than before the decline in prices. Specifications on contracts are fair. Steel bars are steady at 1.20c Pittsburg. Plates and structural remain at 1.30c and hoops 1.60c Pittsburg.

Coke.—There seems to be no change in the market. Foundry coke is in rather large supply in most districts and for prompt shipment the market is easy. Furnace coke is also plentiful and easy. Ovens continue to ask outside quotations for forward delivery, but there are few long time contracts being made. The inside prices quoted below indicate the market on prompt shipment and the outside figures represent prices asked for long time contracts:

	PER TON.
Wise county furnace coke	$1.60 to 1.90
Wise county foundry coke	2.00 to 2.25
Pocahontas furnace coke	1.65 to 1.85
Pocahontas foundry coke	1.85 to 2.25
Standard Connellsvills furnace coke	1.50 to 2.00
Standard Connellsville foundry coke	1.90 to 2.50

Old Material.—It is difficult to locate the market on scrap iron. Dealers themselves seem to be unable to find the market. Prices are quoted largely with a view of getting bids. Some bids are accepted at low figures and this trading basis is about all there is to base quotations upon. Since the break in the market, there has been a slight improvement in the demand and there has been a little more business done during the past week. We quote dealers' prices here as follows:

Old No. 1 R. R. wrought, net tons	$13.50 to 14.00
No. 1 machinery, net tons	13 00 to 13.50
Old iron rails, gross tons	15.50 to 16.50
Old steel rails (re-rolling) gross tons	12.50 to 13.50
Old short lengths, gross tons	12.00 to 13.00
Old iron axles, net tons	15.00 to 16.00
Heavy melting scrap, gross tons	12.00 to 12.50
Stove plate, net tons	10.00 to 10.50
Heavy turnings	7.00 to 7.50
Cast borings, net tons	4.00 to 5.00
Car wheels, gross tons	13.50 to 14.50

The sales organization of the Northern Electric Mfg. Co., Madison, Wis., has been merged into that of the Fort Wayne Electric Works, Fort Wayne, Ind., from which point control will be exercised by F. S. Hunting, sales manager, in the future.

ST. LOUIS.

Many Rumors of Low Prices of Pig Iron.

March 15.

Pig Iron.—There has been no improvement in the pig iron situation in the St. Louis territory. Rumors of lower prices are heard everywhere, and some buyers are quoting as low as $11.50 for No. 2, Birmingham basis. A few inquiries are out, aggregating from 600 to 700 tons, and some of the inquiries that were out last week have been withdrawn. Purchasers seem to be feeling the market with an appreciation that the time when they should buy is near at hand, but they are waiting until prices have reached the lowest ebb. The furnaces are holding out for $12 to $12.50 for No. 2, Birmingham, for prompt shipment and delivery into the second and third quarter. Our prices delivered, to which the freight of $3.75 from Birmingham has been added, follow:

No. 1 southern	$16.25 to 16.75
No. 2 southern	15.75 to 16.25
No. 3 southern	15.25 to 15.75
No. 4 southern	14.75 to 15.25

Coke.—The market for coke is virtually unchanged. The best selected Connellsville foundry is selling at $2.15 to $2.25, ovens, while the contract price remains at $2.25 to $2.50 for delivery over the remainder of the year. Some high-sulphur coke is offered at $1.90 ovens.

Virginia and West Virginia 72-hour foundry coke is bringing $2.25 to $2.50 ovens, for immediate and future shipment. The freight rate to East St. Louis and St. Louis is $2.80 from the Connellsville and Virginia fields and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Old Material—The scrap iron market remains unchanged, with quotations as follows:

Cast iron borings, free from foreign material, net tons	$ 6.00
Steel axle turnings, gross tons	12.00
Steel railroad axles, net tons	17.50 to 18.50
Iron railroad axles, net tons	19.00 to 20.00
Miscellaneous steel scrap, gross tons	12.50 to 13.00
Old car wheels, gross tons	16.00
No. 1 railroad cast scrap, net tons	12.00 to 12.50
Heavy machinery cast, net tons	13.00 to 14.00
Stove plate and light cast, net tons	11.50
Sheet iron, net tons, uncut	5.00
No. 1 railroad wrought, net tons	13.00 to 13.50
Railroad malleable, net tons	12.00 to 12.50
Heavy melting steel, net tons	13.00 to 13.50
Relaying rails, net tons	17.00 to 18.00

BUFFALO.

Pig Iron and Finished Material Markets Quiet.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, Mar. 16.

Pig Iron.—There has been no development of interest in this territory

the past week so far as pig iron is concerned and the same quiet tone prevails. Inquiries are of the same character as reported for several weeks. Prices, as nearly as may be quoted here at this time, are as follows:

No. 1X foundry	$16.25 to 16.75
No. 2X foundry	15.75 to 16.25
No. 2 plain	15.25 to 15.75
No. 3	15.00 to 15.50
Malleable Bessemer	16.50 to 17.00
Gray forge	14.75 to 15.25
Charcoal	20.50 to 21.00

Finished Products.—The market is also quiet and the only good closing expected last week was deferred until March 22. This was the Onondaga Hotel Co.'s fabricated structural for an $800,000 hotel in Syracuse, N. Y., but all bids were in excess of that company's appropriation for steel and bids will again be submitted. All Buffalo interests are now basing on Pittsburg and prices are more settled. Several eastern companies, it is reported here, which declined to hold to certain quotations, are back in line and all now quote bars at $1.20 and shapes at $1.30 Pittsburg. Cold rolled and drawn steel products are selling with 60 off on carload lots and 55 off on less than carloads. Information was received, however, that several closings had been made at 62½ off on less than car lots, but it is believed that such closings have ended. Specifications on small business continue coming in, but large, prospects are conspicuously absent at this time.

BIRMINGHAM, ALA.

Good Prospects for Cast Iron Pipe Plants in the South.

March 15.

Southern pig iron manufacturers claim that they are selling some iron. The quotations are beginning to strengthen up some, the bulk of the iron, however, going at $12 per ton, No. 2 foundry. One or two companies are said to have been selling iron under that price, though there has not been a very great amount of it. One or two furnace companies have positively announced that they are holding their iron at $12.50 and that the indications are that this will be the quotation all around before long. There have been no announcements lately of a curtailment of the production and it is believed that the make in March will equal that of January, unless the latter half of the month should prove disastrous.

The steel plant of the Tennessee Coal, Iron & Railroad Co. continues in steady operation and there is a good output. It is announced that the rolling mills of the same company at Bessemer, 12 miles south of Birmingham, will resume operations next Monday, and quite a little quantity of steel will be used there.

The cast iron pipe industry in the southern territory is booming. It seems probable that the United States Cast Iron Pipe & Foundry Co. will secure the contract for 45,000 tons of cast iron pipe to be awarded by San Francisco, and that the work is to be done at the southern plants of this company, Chattanooga, Tenn., Anniston and Bessemer, Ala. This will insure steady operation at the plants through the rest of the year. The same company on Saturday last started four train loads of pipe on the Cuba order from the Bessemer plant. The other cast iron pipe plants in the Birmingham district have a large number of orders in hand and others in sight and there will be need for some lively purchasing of pig iron before long.

NEW YORK.

Some Activity in Pig Iron in New England—Inquiries for Structurals.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., March 16.

Pig Iron.—New England has furnished the principal activity of the eastern pig iron market of late, a conservative estimate of the business placed in that section during the past ten days being about 25,000 tons. Alabama, Virginia, Pennsylvania and New York furnaces have contributed to make up this aggregate, but the largest portion has been sold by a southern interest which there is good reason to believe went as low as the $11.50, Birmingham, basis to secure the business. The largest single purchase was by a furnace and heating company, but the textile machinery makers have been buying actively. Prices through that territory are in a rather chaotic condition. While figures as low as $16.25, delivered, are reported on good authority in connection with some of this business, it is also known that on several fair sized lots a $17.25, delivered, price was secured, and between these limits most of the business was placed. On one good tonnage of Virginia product, the price was $14.25, furnace. The lowest figures were made by interests in Pennsylvania and New York located at such a distance as to involve a heavy freight rate. There is no activity in malleable, although the market was tested out by several consumers a couple of weeks ago. The large cast iron pipe inquiry is still pending, but outside of New England there is very little inquiry current in the east, this being confined entirely to small lots. The following quotations are for second quarter delivery at New York tidewater:

Northern foundry No. 1	$16.75 to 17.00
No. 2X foundry	16.25 to 16.75
No. 2 plain	15.75 to 16.25
No. 2 southern foundry	16.50 to 17.00
Malleable	17.25 to 17.75
Basic	16.50 to 17.00
Gray forge	15.50 to 16.00

Finished Materials.—Inquiry continues good, particularly in railroad and general structural work, but actual lettings during the past week have not been important. The Boston & Albany has finally put out plans for a large elevator at East Boston, to require about 4,000 tons of steel, two-thirds being plate work. The New Haven is inquiring for 500 tons of signal bridges, and the New York Central is in the market for a 100-ton station at Newburgh. The Lake Shore is asking prices on 6,000 tons of bridge work, the Chicago & Northwestern has received bids on 10,000 tons, the Louisville & Nashville is in the market for 7,000 tons, the Philadelphia & Reading will be ready to buy close to 10,000 tons later in the month, and a number of other lines have good tonnages either under negotiation or in prospect. The Kentucky river bridge of the Cincinnati, New Orleans & Texas Pacific, 4,000 tons, will probably be supplied by the American Bridge Co., which has just taken a 250-ton order from the St. Paul. The Chicago requirements of the Pennsylvania lines west, 1,200 tons, will be supplied by the McClintic-Marshall Construction Co., which has also taken 500 tons for the Erie. Numerous other small orders have been placed, among them one for 500 tons of bridge materials for the Boston & Maine, to be furnished by the Boston Bridge Co. The McHarg-Barton Co. is low on the general contract for the last of the local pier sheds, but the steel has not yet been placed. The Syracuse Bridge Co. submitted the lowest bid on the Onondaga hotel at Syracuse, but all were rejected and the project will be readvertised. From San Francisco comes the report that an addition requiring 2,000 tons of steel is to be built on the St. Francis hotel in that city, and bids are being invited, though the project may not go through. There is talk that the Whitehall building extension in this city, requiring a big tonnage, is to

be rushed through; plans were filed several months ago.

Structural prices are very low, the competition on fabricated and erected material being extremely keen. For the most part, however, the price of 1.30, Pittsburg, on plain material is being observed. There is little business current in plates, and billets are moving very slowly. Bar iron can be had as low as 1.35c, New York city. We quote:

Angles, 3 to 6 inches x ¼-inch and heavier, 1.46c; beams, 3 to 15 inches, 1.46c; tees, 3 x ¼-inch and heavier, 1.51c; plates, carloads, tanks, 1.46c; marine boilers, 1.86c; bar iron, 1.35c to 1.40c; soft steel bars, 1.35c; sheets, No. 28, black, 2.56c.

Ferro-Alloys.—Eastern consumers of ferro-manganese, with one or two exceptions, are covered for some months ahead, and there is consequently little interest in the market. Prices are perhaps a little lower, it being possible to shade $42, seaboard, on attractive tonnages. Ferro-silicon is also inactive, the price ranging about $60, Pittsburg.

METAL MARKET

NEW YORK.

March 16.

Copper.—After accumulating some measure of strength, the market again took a downward tone and yesterday slumped sharply in sympathy with a weak situation abroad. Sales of electrolytic were made as low as 12⅛c, the lowest figure in many months. Lake is quoted at 12½c to 12⅝c, and casting at 12c to 12⅛c.

Pig Tin.—The severe break in the London market yesterday sent spot metal down to 28¼c to 28⅝c, but even at this figure there was little demand and practically no selling.

Pig Lead.—Buying is a little more brisk than a week ago and the market is holding its own at a level of 3.95c to 4c, New York.

Spelter.—Moderate activity during the week, chiefly from brass manufacturers, has given the situation slightly more strength, and we quote 4.75c to 4.77½c.

Antimony.—Cookson's, 8c to 8⅛c; Hallett's, 7⅝c to 7⅞c; ordinary brands, 7 3/8c to 7⅝c.

CHICAGO.

March 16.

The local market has been influenced somewhat by the break in tin and the sagging of copper prices. For small lots there is not a very material change, however, and we quote as follows:

Lake copper, carload lots, 13½c to 14c; castings, carload lots, 13½c; pig tin, 30c; spelter, 4.80 to 4.95c; pig lead, desilverized, 4c to 4.10c in 50-ton lots; corroding, 4.65c to 4.70c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 6¾c list f. o. b. LaSalle in car lots of 600-pound flasks; Cookson's antimony, 10½c to 11c; other grades, 10c.

With the exception of zinc and lead scrap metal prices are slightly lower this week. We quote as follows:

Copper wire, 11¼c; heavy copper, 11c; light copper, 10¼c; heavy red brass, 10¼c; heavy yellow brass, 8¼c; light brass, 6c; No. 1 red brass borings, 8½c; No. 1 yellow brass borings, 7½c; brass clippings, 8c; tea lead, 3c; lead scrap, 3.40c; zinc, 3.25c; tin pipe, 24c; tin foil, 22c; pewter, 17c; electrotype plates, free from dross, 3.75c; electrotype dross, 2.60c; stereotype plates, 4c; stereotype dross, 3.75c; prime slab zinc dross, $45 per ton.

ST LOUIS

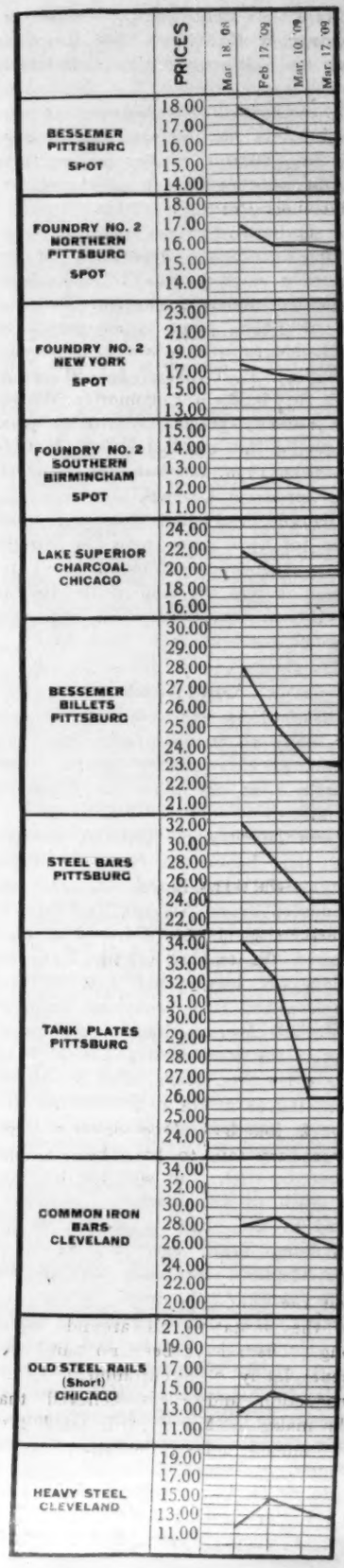
March 15.

Lead and Zinc.—Zinc ore brought $37.50 in the Joplin district last week for 60 per cent ore, the highest figure being $40 a ton on an assay base price of $37. The greatest part of the ore was disposed of at from $34 to $36 a ton base. Many of the plants are operating at little or no profit at such prices and some of them assert they are running at a loss. In the sheet ground districts, where the cost of production is heavy, this is particularly true, and many of the plants are not running.

Lead showed an increase of $1 a ton, the best price being $50, over the preceding week. Extra good grades were in strong demand, at least those running better than 80 per cent. Some of the extra-quality mineral brought an excess of $50. Calamine or silicate of zinc sold for $18 base of 40 per cent ore, with the high price of $24 reported. The St. Louis metal markets were unchanged at the close of the week. Spelter was $4.65 and pig lead at $3 85. New York spelter was stationary at $4.77½, and pig lead was stronger at $4.

The sale of the Passaic Steel Co., Paterson, N. J., as previously announced, will be held April 9 at the offices of the company. An upset price of $700,000 is provided.

PRICE CHART.



PERSONAL.

E. C. Stebbins has been chosen manager of the Western Malleable Steel Co., of Detroit.

Frank S. Witherbee, of Witherbee, Sherman & Co., New York City, has gone to California for a considerable time.

L. A. Cradall has resigned as vice president of the Detroit Foundry Supply Co., Detroit, to become manager of the western branch of the J. W. Paxson Co., of Philadelphia.

F. E. Parks, for two years in charge of the open-hearth department of the Colorado Fuel & Iron Co., has been appointed assistant superintendent of the Minnequa plant in succession to J. H. Means.

William P. Henzey, for 50 years with the Baldwin Locomotive Works, was recently presented with a gold plaque by his associates. Mr. Henzey has been ill at his home in Philadelphia for several weeks.

George F. Fenno, insurance engineer for two years with the Middle States Inspection Bureau, has resigned to join the staff of the George H. Gibson Co., advertising engineers, Tribune building, New York City.

OBITUARY.

Joseph H. Comerford, aged 50, and for many years confidential agent for Manning, Maxwell & Moore, died March 3 at his home in Brooklyn, N. Y.

John H. Stewart, aged 46, an iron and steel broker for years in Pittsburg, died there March 11. He was graduated from Stevens Institute at Hoboken, N. J., in 1884, and at once entered the employ of the Keystone Bridge Co., leaving that firm to enter the iron and steel brokerage business.

Mathew Morton, founder and president of the Morton Mfg. Co., at Muskegon Heights, Mich., died March 10, following an attack of pneumonia. Mr. Morton was born in Scotland in 1836. From Rome, N. Y., he went to Muskegon in 1891. He was the inventor of much of the machinery manufactured in the plant he established.

Wilkins Trick, aged 67, who had been identified for years with the tin plate industry of South Wales and United States, died at Pittsburg March 11. He was the founder and first secretary of the South Wales Tin Plate Masters' Association. He came to America in 1884 and became identified with the tin plate industry of this country.

Henry Timken, president of the Timken Roller Bearing Axle Co., of Canton, O., aged 76 years, died March 16 in California, where he had resided for the past 20 years. Born in Germany, when a lad he located with his family in St. Louis, later with his two sons, William R. and Harry H., organizing the Canton plant, which was recently extended by the purchase of a plant at Detroit.

John Henry Van Dyke, a leader in the early development of Wisconsin mining, pioneer lawyer, one of the founders and former president of the Northwestern Mutual Life Insurance Company of Milwaukee, and one of the best known public men of the city, died at his home in Milwaukee on March 9 at the age of 86 years. Mr. Van Dyke was successively director and vice-president of the Menominee Mining Company, the pioneer of the Menominee range in Wisconsin and the upper peninsula. In 1887 he was elected president of the Chapin Mining Co., and in the same year, the Pewabic Co. was organized with Mr. Van Dyke as vice-president.

Charles Lewis Hildreth, agent of the Lowell Machine Shops, Lowell, Mass., for many years an authority on mill machinery, died at his home in Westford, Mass., Feb. 26. He was born in Concord, N. H., and in 1845 at Lowell began his apprenticeship as an iron worker, serving three years. After a short residence in Philadelphia, he became contractor in the Lowell Machine Shop, and in 1865 assumed charge of the shop as general foreman. In 1879 he was appointed superintendent, and later agent. When the plant passed into new hands some years ago Mr. Hildreth retired. He was a member of the American Society of Mechanical Engineers.

Boston Metal Trades.—The annual meeting of the Boston branch of the Metal Trades Association was held at the Parker House, March 9, previous to the monthly dinner. The election of officers resulted as follows: President, Edwin E. Bartlett; vice president, E. P. Adamson; treasurer, Duncan D. Russell; executive committee to 1911, Winslow Blanchard and H. I. Illingwood. D. F. S. Clark will be re-elected secretary by the board.

The Crucible Steel Co. of America, reporting net profits for six months ending Feb. 28, of $947,695, has declared a dividend of 1 per cent on preferred stock, payable March 31. The last preferred dividend declaration was in December, 1907.

ONLY ONE BID

For Cast Iron Pipe for San Francisco —Foreigners Protest.

San Francisco, March 12.—Just one solitary bid was received by the board of public works for furnishing the 44,566 tons of iron pipe to be used in constructing the auxiliary fire system. The bid came from the United States Cast Iron Pipe & Foundry Co., and is for the entire quantity of pipe asked for, amounting to about $1,475,000.

An agent representing European manufacturers, pleaded for additional time, stating that the European fabricators could deliver the pipe at a saving to the municipality of at least $150,000, and would complete the delivery within the specified time, though they would have to commence later than the time asked. The board of public works was not willing to go outside the United States for its supplies which Americans can furnish. The New York agent of a Glasgow manufacturer telegraphed a protest against letting the contract for the pipe before he had a chance to be heard.

Before accepting the bid of the United States Cast Iron Pipe & Foundry Co., the board of public works, through Commissioner McGilvary, is trying to induce the railroads to agree to a rate of $10 a ton for freight. If the railroads will make that figure the bid will probably be accepted. The tariff charge is $13 a ton.

Metal Trades Convention.—The eleventh annual convention of the National Metal Trades Association, which is to be held in New York City, at the Hotel Astor, April 14-15, promises to be of unusual interest. Among the subjects which will be presented are the following: The Premium System of Paying for Labor, by Wm. Lodge, of the Lodge & Shipley Machine Tool Co., Cincinnati; Probable Changes in the Law of Employers' Liability, by Epaphroditus Peck, lecturer on the law of master and servant, in Yale University, and associate judge of the court of common pleas, Hartford, Conn.; the Rights of Labor from a Workingman's Viewpoint, by James Wilson, president of the Pattern Makers' League of North America; The Labor Question, by David Gibson, editor of *Common Sense*, Cleveland; Importance of Apprenticeship Systems, by E. P. Bullard Jr., of the Bullard Machine Tool Co., Bridgeport, Conn.

A FINAL SURPLUS

For Year Which Had Gloomy Opening Made by Sloss-Sheffield Steel and Iron Co.

The Sloss-Sheffield Steel & Iron Co. in its report for the year ended Nov. 30, 1908, furnishes the following comparative statement of gross receipts, expenditures, net earnings, etc.:

	1908.	Decrease.
Gross sales and earnings	$5,536,811	$1,117,492
Op. ex., taxes and main...	4,241,056	509,401
Net earnings	$1,295,755	$527,091
Fixed charges	210,000	.....
Balance	$1,085,755	$527,091
Depreciation	121,795	11,388
Balance	$963,960	$515,703
Preferred dividend (7%)..	469,000	.....
Balance for common	$494,960	$515,703
Common dividend (4¼%)	425,000	75,000
Surplus	$69,960	$440,703
Previous surplus (adj.)....	3,146,386	*495,469
P. and L., surplus	$3,216,348	*$54,766

*Increase.

Dividends on the common stock in 1907 were at the rate of 5 per cent.

After referring to the gloomy outlook with which the company's fiscal year was confronted Dec. 1, 1907, and the violent reaction which followed sharply upon the heels of the panic of October preceding, President J. C. Maben said:

As emphasizing the great depression in the iron trade, it may be stated that so far as can be recalled this was the first time that this company or its predecessor, the Sloss Iron and Steel Co., in a period of 20 years, had ever felt it best to put a furnace out of blast, owing to the state of the iron market.

Beside the general business depression's influence the company, together with others in the South, was compelled to oppose a strike of coal miners which President Maben says was costly to both sides but which had some compensating features. Today about 95% of the coal mines in Alabama are running "open shop." Further reference is made to the efficiency of labor generally in the report which points out that although the company had but 57% of its furnace capacity in blast during the year yet production fell off only 15,000 tons compared with the output of the previous year. Notwithstanding interference of a 90-day drouth with the ore washing plants, yet the production of brown ore at Russellville increased 43,000 tons over that of 1907 with a decrease in cost of 20 cents a ton.

BI-MONTHLY WAGE

Settlement Results in Increased Returns to Tonnage Employes.

At the regular bi-monthly examination of the sales sheets of representative bar iron makers at Pittsburg, March 11, the basing price for the adjustment of the wages of the workmen under the scale of the Amalgamated Association of Iron, Steel and Tin Workers, was found to be 1.35c. Upon this card the puddling rate for March and April will be $5.37½ per ton compared with $5.25 a ton during January and February, when the average selling price of bar iron was found to be 1.30c. On the finishing scale the 1.35c base represents an advance of 1 per cent in wages. The average selling prices and the boiling rates which have prevailed at the last three bi-monthly examinations, are as follows:

	Selling Price.	Boiling Rate.
November-December	1.30c	$5.25
January-February	1.30c	5.25
March-April	1.35c	5.37½

The sheet and tin plate settlement which was also made the past week shows no change in wages under the scale, as prices in these products have been at base or under for months and the compensation of the workmen per ton has been at the minimum rate under the present agreement.

SMALL DEFICIT REPORTED BY ALABAMA CONSOLIDATED COAL & IRON.

The Alabama Consolidated Coal & Iron Co. in its report for the year ended Oct. 31, 1908, shows total net earnings for the year of $108,381 compared with $657,985 in 1907. After paying interest on bonded debt of $113,179, the deficit for the year was found to be $4,793. Total sales of iron amounted to $1,563,748 compared with the total the previous year of $2,236,953. Commenting upon the year's results President J. H. Hoadley said:

Considering the far reaching effects of the panic, and the serious strikes, the result for 1908 should be regarded as favorable. During the year $91,000 was spent in construction work, the larger part of which was caused by our having been obliged to finish work undertaken in 1907. With the plants now brought up to a high degree of efficiency, and the general resumption of business, there is much reason to expect an early resumption of preferred dividends and the payment of those have been deferred.

Steel Foundry Earnings.—The report of the American Steel Foundries and subsidiary companies for the quarter and half year ending Jan. 31, 1907, is as follows:

	Quarter ended Jan. 31, 1909.	Quarter ended Oct. 31, 1908.	Half-year ended Jan. 31, 1909.
Net earnings	$183,856	$ 11,548	$195,404
Other income	10,372	36,057	46,429
Total income	$194,228	$ 47,605	$241,823
Deductions	150,511	160,195	310,600
Net income	$ 43,717	*$112,590	*$ 68,783

*Deficit.

CAMBRIA STEEL

Shows $43,756 Carried to Credit Profit and Loss in 1908.

Included in the annual report of the Cambria Steel Co. for the year ending Dec. 31, 1908, which has just been presented, is a comprehensive and yet succinct summary of conditions prevailing in the iron and steel trades during that year. In presenting the report President Powell Stackhouse called attention to the fact that "shipments of steel show a decrease of 43.3% in quantity and 42.3% in gross value of all products compared with the preceding year," and added:

There was little recovery from the depression in business as indicated in report for 1907, that ruled at the close of that year, as is fully indicated by the falling off in your business. This was most pronounced in all lines of your products used by the railroads as shown by the comparative percentages of your output with 1907; i. e., rails 28%, cars 21%, locomotive and car axles 38%, while steel that was in more general use—bar and agricultural steels, the demand was 64%, structural shapes 54% and plates 46%.

A complete schedule of improvements, which have been made and are being made at the various plants, is presented upon which this comment is offered:

There was expended for improvements $560,548.52; of this amount $482,080.44 was charged to plant additions and the remainder, $78,468.08, was repaid by amount realized from sales in 1908 of real estate and minerals, under terms of your lease from Cambria Iron Co. There was expended in addition, $352,225.10 for replacements and alterations, and charged to operating accounts.

The following summary of the financial operations of the company for the year is given:

Net earnings from Operations		$ 824,159.45
To which add: Receipts from Rents, Income from Investments, etc. Of this amount $705,716.50 was due to profits from Ore Mining and Lake Transportation Companies, and $164,019.73 to profit on surplus ore sold		1,067,690.42
		$1,891,849.87
Deduct Fixed Charges under Cambria Iron Co. Lease and Incidentals		398,093.48
Net income twelve months		$1,493,756.39
Total to credit Income Account, December 31, 1908		$1,493,756.39
Which has been appropriated as follows:—		
Dividend paid Aug. 15, '08	$675,000	
Dividend paid Feb. 15, '09	675,000	$1,350,000.00
Set aside to General Depreciation Fund	100,000.00	1,450,000.00
Balance carried to credit of Profit and Loss Account		$43,756.39
The Profit and Loss Account which had a credit Dec. 31, 1907, of		$2,356,218.43
Has been increased by balance of Income Account transferred as above		43,756.39
By collection of accounts charged off in previous years	$28,242.07	
Less bad or doubtful accounts in 1908	24,509.39	3,732.68
Leaving Balance to credit of Profit and Loss Account, Dec. 31, 1908		$2,403,707.50

THE IRON TRADE REVIEW

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March 18, 1909.

AN IMPORTANT LINK.

In another paragraph in this issue, attention has been directed to an important step in the development of the Cayuna iron ore district, from a commercial stantpoint. There is much of interest attaching to the project now on foot. The Northern Pacific railroad traverses the Cayuna range and at present has the only line to Duluth, a distance of 100 miles. The only rate on ore to Duluth which this road is credited with having offered is 80 cents, a tariff similar to that charged from the Mesabi range to Duluth. In the last few years, the Soo line has been gradually creeping into Northern Pacific territory. Entrance and terminal facilities into Duluth have been acquired and now, with a direct connecting link through what gives promise of being a heavy traffic district, there is likelihood of interesting competition for ore tonnage. Whether a lower rate than 80 cents will result concerns not only the Cayuna range, but the Mesabi range as well, for the establishment of a 60 cent rate for a haul of 100 miles in one part of Minnesota will afford almost certain precedent by which will be forced a reduction to a like rate in the Mesabi district. This probably does not apply to the Vermilion range, where both mines and railroad are under the control of the one interest.

The developments of the railroad situation on the Cayuna are less likely to result in an agreement such as might be made between railroads on the basis of 80 cents because of the control held by a mining company interested in the reduction of the rate. The Northern Pacific has gained control over a large acreage of property on this range, which also materially strengthens its position.

THE QUESTION OF ORE PRICES.

There were those in the ore trade who a year ago deprecated the efforts then made to couple ore prices with the prices for finished steel products and who felt that it would better befit the traditions and practices of the ore trade to keep the matter of ore prices distinct from the movement, or lack of movement, in prices of finished steel products. There were fears expressed that any linking together of trades hitherto conducted each along its own lines would run the risk of bringing unpleasant consequences in the future. However, a decision was reached to maintain ore prices and later, just at the time that finished steel products were reduced, in June, a reduction of 50 cents was made in ore.

Possibly as a result of that linking together, there is an expectation at present in many quarters that there will be a reduction in ore prices for the coming season. The argument is supposed to be so plain as scarcely to require definite statement; steel products have been reduced, naturally ore prices must come down.

The ore interests fail to see the exact connection in this instance, just as many failed to see the exact connection a year ago. There may be some reasons why ore should seek a lower level this season, but there are many cogent ones why it should not. There is a large amount of ore left on docks and at furnaces, on which the ore interests would not lightly write a heavy depreciation. There is no occasion for ore interests to sell ore at lower prices in order to realize cash, for selling ore is not realizing cash, but the reverse, as the expenses of mining and transportation must be met in a few months, and payments are distributed over many months. Royalties on minima not mined are not lost, but are a credit against future mining, and only the interest is lost. Most of the ore interests, besides, have blast furnaces of their own and it would not be good business for them to go out of their way to set up competition for themselves. It is a question whether they are ore interests with a little blast furnace interest on the side, or blast furnace interests with a little ore interest on the side. Most of them would be inclined, probably, to adopt the latter designation, particularly at a time when there is considerably less demand than enough to run all existing furnace capacity.

A NEW ORE PROJECT.

Some weeks ago, as mentioned in THE IRON TRADE REVIEW, there was incorporated by Cuyler Adams and other interests the Cuyuna Range Railway Co. The object of this incorporation was the building of a railroad from Duluth to Deerwood in the center of the Cuyuna range iron ore district. Control of this corporation has been obtained by the Rogers-Brown Ore Co. and Cuyler Adams, and a proportional traffic arrangement with the Soo line has been completed. If contracts can be obtained for sufficient ore tonnage running with the land, a railroad will be built into the range country at once and connection made with the Soo road. Men are already doing the preliminary field work on the survey.

Molders Strike.—Foreigners to the number of 500 employed as steel molders in the plants of the American Car & Foundry Co., at Granite City, Ill., went on strike March 13, when their demands for an increase in wages of 25 per cent were refused by A. Walscher, superintendent of the plants.

Seventh Annual Report of the United States Steel Corporation

Following are liberal extracts from the seventh annual report of Chairman Gary and President Corey of the United States Steel Corporation for the year ending Dec. 31, 1908:

Volume of Business.

The volume of business done by all companies during the year, as represented by their combined gross sales and earnings, equaled the sum of $482,307,840.34.

This amount represents the aggregate gross value of the commercial transactions conducted by the respective companies, and includes sales made between the subsidiary companies, and the gross receipts of the transportation companies for services rendered both to subsidiary companies and to the public.

The earnings for the year resulting from the above gross business represent the combined profits accruing to the several corporate interests on the respective sales and services rendered, each of which is in itself a complete commercial transaction.

Employes' Stock Subscriptions.

In January, 1909, there was offered to the employes of the United States Steel Corporation and of the subsidiary companies the privilege of subscribing for 18,000 shares of preferred stock and 15,000 shares of common stock at the price of $110 per share for the former and $50 per share for the latter. The conditions attached to the offer and subscription were substantially the same as those under which preferred stock had been offered in each of the previous six years, excepting as to the subscription price. Moreover, because of the lower price at which the common stock was offered, as compared with the price for the preferred, the special bonus to be paid subscribers who retain their stock for five years was fixed for the common shares at one-half the amount of bonus which is to be received by holders of preferred shares. Subscriptions were received from 19,192 employes for an aggregate of about 23 per cent in excess of the amount of stock offered. Subscriptions were reduced pro rata except that employes subscribing for stock equaling a value at the subscription price of $110 or less per employe, were allotted the full amount subscribed for. The total number of shares allotted was 18,000 of preferred and 15,318 of common stock. At Dec. 31, 1908, there were 22,960 employes who had purchased preferred stock under offers made by the Corporation, and who on that date either held the certificates of stock or were making monthly payments on account of the purchase price thereof.

Production.

The production of the several subsidiary properties for the year 1908, in comparison with the results for the year 1907, is shown in the subjoined table. In order to make the comparison upon relatively the same basis, the production figures of the T. C., I. & R. R. Co. for the entire year 1907 have been included in the results shown below for that year:

Products—	1908.	1907.
IRON ORE MINED—		
In Lake Superior Region	Tons.	Tons.
Marquette Range	830,087	1,170,496
Menominee Range	1,021,598	1,625,358
Gogebic Range	1,078,025	1,425,457
Vermilion Range	927,206	1,724,217
Mesaba Range	11,272,397	16,458,273
In Southern Ore Region		
Tennessee Coal, Iron & R. R. Co.'s Mines	1,533,402	1,576,757
Total	16,662,715	23,980,558
COKE MANUFACTURED		
Bee-Hive Ovens	7,591,062	12,716,013
By-Product Ovens	578,869	828,751
Total	8,169,931	13,544,764
COAL MINED, not including that used in making Coke	3,008,810	3,550,510
LIMESTONE QUARRIED	2,186,007	3,201,222
BLAST FURNACE PRODUCTS—		
Pig Iron	6,810,831	11,234,447
Spiegel	74,716	130,554
Ferro-manganese and Silicon	48,861	57,794
Total	6,934,408	11,422,795
STEEL INGOT PRODUCTION—		
Bessemer Ingots	4,055,275	7,556,460
Open-Hearth Ingots	3,783,438	5,786,532
Total	7,838,713	13,342,992
ROLLED AND OTHER FINISHED STEEL PRODUCTS FOR SALE		
Steel rails	1,050,389	1,879,985
Blooms, Billets, Slabs, Sheet and Tin Plate Bars	551,106	761,195
Plates	312,470	894,364
Heavy Structural Shapes	313,733	587,954
Merchant Steel, Skelp, Hoops, Bands and Cotton Ties	577,591	1,338,833
Tubing and Pipe	654,428	1,174,629
Rods	93,406	126,095
Wire and Products of Wire	1,275,785	1,481,226
Sheets—Black, Galvanized and Tin Plate	770,321	1,070,752
Finished Structural Work	403,832	719,887
Angle and Splice Bars and Other Rail Joints	84,669	195,157
Spikes, Bolts, Nuts and Rivets	40,252	67,991
Axles	24,057	189,006
Sundry Steel and Iron Products	54,893	77,463
Total	6,206,932	10,564,537
Spelter	28,057	31,454
Sulphate of Iron	26,411	24,540
	Bbls.	Bbls.
Universal Portland Cement	4,535,300	2,139,700

Comparative Income Account.

For the Fiscal Years ended December 31, 1908 and 1907.

	1908.	1907.	Increase or Decrease.
EARNINGS	$91,847,710.57	$160,964,673.72	$69,116,963.15 Dec.
Less, Appropriations for the following purposes, viz.:			
Sinking Funds on Bonds of Subsidiary Companies	1,588,070.45	1,977,761.03	389,690.58 Dec.
Depreciation and Extinguishment Funds (regular provisions for the year)	3,844,214.21	6,681,746.03	2,837,531.82 Dec.
Extraordinary Replacement Funds (regular provisions for the year)	11,532,896.80	15,560,237.38	4,027,340.58 Dec.
Special Replacement and Improvement Funds	.....	3,500,000.00	3,500,000.00 Dec.
Net Earnings in the Year	$74,882,529.11	$133,244,929.28	$58,362,400.17 Dec.
Deduct:			
Interest on U. S. Steel Corporation Bonds outstanding	23,862,646.70	22,860,352.82	1,002,293.88 Inc.
Sinking Funds on U. S. Steel Corporation Bonds, viz.:			
Installments	4,050,000.00	4,050,000.00	.....
Interest on Bonds in Sinking Fund	1,335,203.30	1,087,497.18	247,706.12 Inc.
	$45,634,679.11	$105,247,079.28	$59,612,400.17 Dec.
Less, Charged off for various accounts and adjustments	Cr. 94,034.59	681,515.52	775,550.11 Dec.
Balance	$45,728,713.70	$104,565,563.76	$58,836,850.06 Dec.
Dividends on U. S. Steel Corporation Stocks, viz.:			
Preferred, 7 per cent.	25,219,677.00	25,219,677.00	.....
Common, 2 per cent.	10,166,050.00	10,166,050.00	.....
Surplus Net Income for the Year	$10,342,986.70	$ 69,179,836.76	$58,836,850.06 Dec.
Appropriated from Surplus Net Income for the following purposes, viz.:			
On account of expenditures made and to be made on authorized appropriations for additional property, new plants and construction, and for discharge of capital obligations	.....	35,500,000.00	35,500,000.00 Dec.
Specifically set aside for authorized appropriations and expenditures account construction Gary, Indiana, Plant	.....	18,500,000.00	18,500,000.00 Dec.
Balance of Surplus for the Year	$10,342,986.70	$ 15,179,836.76	$ 4,836,850.06 Dec.

Maintenance, Renewals and Extraordinary Replacements.

The expenditures made by all companies during the year 1908 for maintenance and renewals, including the relining of blast furnaces, and for extraordinary replacements, in comparison with expenditures for the same purposes during the preceding year, were as follows:

	1908	1907	Decrease	Per Ct.
Ordinary Mainten'ce and Rep'rs..	$27,328,955 79	$35,503,668.32	$8,174,712.53	23.0
Extraordinary Replacements	10.729,603.92	20,324,584.80	9,594,980.88	47.2
Total	$38,058,559.71	$55,828,253.12	$17,769.693.41	31.8

The decrease, as compared with preceding year, in the outlays for ordinary or current maintenance and repairs, is attributable entirely to the fact that the plants and properties were operated to a much lesser extent than in 1907. Accordingly fewer repairs were necessary. Advantage was taken, however, of the shutdown during the year of many plants to make such repairs as it is neither practical nor economical to prosecute while the mills are in operation.

The expenditures for extraordinary replacements show a considerably larger relative decrease as compared with 1907 than do those for current maintenance and repairs. This is attributable in part to the fact that in the two previous years rehabilitation and modernizing of the properties was conducted on a very liberal scale and in part to the fact that expenditures of this character are not made from year to year on relatively the same basis that the properties are operated. At the close of the year the plants and properties collectively speaking were in first class physical condition.

The entire amount of the foregoing expenditures was charged to current operating expenses and to replacement funds reserved from earnings.

Inventories.

At Dec. 31, 1908, the aggregate book valuation of the inventories of all the properties equaled $143,179,629 in comparison with a total at close of the preceding year of $136,188,874, an increase of $6,990,755. This increase is attributable chiefly to the larger quantities on hand at close of 1908 of iron ore, pig tin and spelter. At Dec. 31, 1908, the tonnage of iron ore on hand in stock piles at mines at furnaces and at lower lake docks was 24 per cent greater that at close of the preceding year. The average price at which the ore was inventoried is, however, somewhat less, as shown by an increase of only 13.5 per cent in valuation against an increase of 24 per cent in quantity.

Inventories were taken on the basis of actual purchase or production cost of materials to the respective companies holding the same, unless such cost was above the market value on Dec. 31, 1908, in which case the market price was used. Inventory valuations are believed to be conservative, the aggregate valuation for all raw, partly finished and finished materials produced within the organization being below the market price on Dec. 31, 1908. Inventory valuations do, however, include the profits on materials embraced in inventories which have been purchased by one subsidiary company from another; but, such profits are segregated and carried in a specific surplus account, and will not be included in the reported earnings of the entire organization until such profits shall have been converted into cash or a cash asset to the organization. The specific surplus account referred to is, therefore, practically, a guarantee fund for these profits so locked up in inventories pending realization in cash.

The following is a general classification of the inventory valuations at Dec. 31, 1908, in comparison with Dec. 31, 1907:

Ores		$65,783 299	$58.934,718
Pig Iron, Scrap, Ferro and Spiegel.....		6,774,830	6,417.224
Coal, Coke and Other Fuel		2,574,738	2,697,728
Pig Tin, Spelter, Copper, Nickel, Aluminum and Dross and Skimmings		5,468,428	3,504.867
Limestone, Fluxes and Refractories		1,771 515	2.243.268
Rolls, Molds and Stools		4,448,411	4,331,139
Manufacturing Supplies, Stores and Sundry Items not otherwise classified		10,823.629	11.569 216
Ingots—Steel		750 562	451.552
Blooms, Billets, Slabs, Sheet and Tin Plate Bars, etc..		6,366 959	6,416 619
Wire Rods		733.357	709 060
Skelp		1.040.720	1.212.483
Finished Products		25 999 591	24,868.713
Material in Transit		2,156,668	1,803,482
Mining Supplies and Stores (for ore and coal properties		3.147 232	3,101.742
Railroad Supplies and Stores		2,972.409	2,979.707
Merchandise of Supply Companies		607.191	797,115
Material, labor and expense locked up in bridge and structural contracts.....	$13.747.615		
Less, Bills rendered on account.....	13.242,518		
....		505,097	2 294.103
Stocks abroad and on consignment.....		1.254,993	1,806,138
Total		$143,179,629	$136.188.874

Summary—April 1, 1901, to December 31, 1908.

Capital Surplus provided at date of organization.....			$25,000,000.00
Aggregate net profits as above.....		$560,938,617.19	
Less, Amount included therein representing accrued profits on inter-company materials on hand in inventories.....	$10,371,803.25		
Net Charges against Profits made at close fiscal years, not applicable to particular quarters	7,119,665.15		
Reserved for fund to cover possible failure to realize advanced mining royalties.....	2,800,000.00		
		20.291.468.40	
Balance of Profits earned.....			540,647,148.79
			$565,647,148.79
Dividends paid on U. S. Steel Corporation Stocks, viz.:			
Preferred, 54¼ per cent.....		$218.975.274.66	
Common, 15½ per cent		78,765,032.50	
			297,740.307.16
Leaving a surplus of			$267,906,841.63
Of the foregoing surplus there has been appropriated for payment of construction and capital expenditures and special charges, per sixth annual report, page 8			162,827.364.16
Balance of surplus Dec. 31, 1908, exclusive of subsidiary companies' intercompany profits in inventories.....			$105,079,477.47
Undivided surplus of subsidiary companies on Dec. 31, 1908, representing profits accrued on sales of materials to other subsidiary companies and on hand in latter's inventories.....			28,335 736.70
Total.....			$133,415,214.17

Employes and Pay Rolls.

The average number of employes in the service of all companies during the fiscal year of 1908, in comparison with the fiscal year of 1907, was as follows:

Employes of—	1908. Number	1907. Number
Manufacturing Properties	118,557	151,670
Coal and Coke Properties	17,164	21,447
Iron Ore Properties	13,135	16,462
Transportation Properties	14,165	18,133
Miscellaneous Properties	2,190	2,468
Total	165,211	210,180
Total annual salaries and wages	$120,510,829	$160,825,822

Capital Expenditures.

The expenditures made during the year by all companies and properly chargeable to capital account, for the acquisition of additional property and construction, less credits for property sold, equaled the aggregate sum of $49,422,697.42. All of the above expenditures comprehend, as stated in the certificate of the chartered accountants, only actual additions and extensions to the plants and properties.

In addition to the foregoing amount of expenditures made during the year for additional property and construction, there was expended the gross sum of $7,453,158.33 for stripping the overburden from ore bodies preliminary to mining ore from open pits, for additional logging equipment, etc. Against this charge was credited $1,813,611 for expenses of foregoing character absorbed in operating expenses for 1908 for mining ore and timber logged, leaving a net increase during the year in the amount invested in stripping outlays and logging equipment of $5,639,547.33. The total investment at Dec. 31, 1908, in these operations and carried in property account equals $15,936,929.20, all of which will be absorbed in operating expenses when respectively the ore thus uncovered is removed and timber is cut.

Since April 1, 1901 (the date of organization of United States Steel Corporation), to Jan. 1, 1909, the amount expended by all companies for additional property and construction (including expenditures by T. C., I. & R. R. Co. from Nov. 1, 1907, only) equaled $255,497,987.37.

Reference is made to statement in other parts of this report, showing the sources from which were provided the funds for payment of the foregoing total of capital expenditures made since April 1, 1901; also for the payments made since same date of capital liabilities (bonds, mortgages and purchase obligations), together with the disposition made in the accounts of the organization of the charges and payments named.

General.

The depression which began in the fall of 1907 in nearly all lines of industry throughout the United States continued during the year 1908 and was severely felt in the steel and iron trade. The extent to which these changed conditions affected the business of the subsidiary companies of the organization is shown by the decreased earnings and output in 1908 as compared with similar results for the preceding year. The production of rolled and other finished steel products for sale to customers outside of the organization was in 1908 only 6,206,932 tons, the lowest for any calendar year since the United States Steel Corporation has been organized. The falling off in business compared with the year 1907 was more marked in the domestic than in the export trade, as shown by the following figures of shipments of all kinds of products to customers:

	1908.	1907.	—Decrease—	%
Domestic—				
Rolled and other finished steel products	5,505,090	9,477,491	3,972,401	41.9
Pig iron, spiegel, ferro and scrap	254,925	417,514	162,589	38.9
Iron ore, coal and coke	1,314,295	2,310,108	995,813	43.1
Sundry materials and by-products	28,146	28,990	844	2.9
Total tons all kinds of material, except cement	7,102,456	12,234,103	5,131,647	41.9
			(Increase)	
Cement (barrels)	4,138,757	2,322,875	1,815,882	....
Export—				
Rolled and other finished steel products	777,276	1,014,014	236,738	23.3
Pig iron and scrap	21,898	.....	21,898	....
Sundry materials and by-products	232	68	164	....
Total tons all kinds of material	799,406	1,014,082	214,676	21.2

The export business constituted about 12.4 per cent of the entire shipments of rolled and other finished steel products. The average prices received for exported material of all kinds, while somewhat lower than was received in the preceding year, compared very favorably with the average for the domestic business. The advantage to both the manufacturer and the employes of the permanent establishment of a fair volume of foreign trade, especially during periods of lesser activity in the United States, was most forcibly illustrated during 1908. An essential feature necessary to the successful conduct of a foreign trade, and one that can be obtained only by remaining continuously in the business, is that the manufacturer, his grades of goods and his methods shall become known to the consumers. Otherwise the use of the foreign market is largely limited to the so-called "dumping" process, which is only accomplished at profitless prices.

In the domestic trade the prices received for steel products shipped in 1908 averaged substantially the same as those received in the preceding year.

The expenditures made by the subsidiary companies during the year for additional property, construction and improvements, including outlays for account of the Gary plant in Indiana and for the Tennessee Coal, Iron & R. R. Co., were as follows:

Additional property and construction—	
For all properties except those noted below	$27,227,863.38
For Gary plant	18,733,841.04
For Tennessee Coal, Iron & R. R. Co	3,460,993.00
Improvements and extraordinary replacements	10,729,603.92
	$60,152,301.34

The purposes for which the above expenditures were made are shown in considerable detail in tables in this report. Generally speaking, the outlays were made in the continuation and completion of additions and improvements which had been authorized and were under way at the time of the commencement of the industrial depression which followed the financial panic in the fall of 1907. Some new work of considerable magnitude was, however, authorized during the year, principally by the coke properties, to provide the added fuel requirements called for by the additional furnaces completed and nearing comple-

tion at Gary, Carrie, Duquesne and Youngstown; by the iron ore properties in opening and developing mines in order to supply the increased ore tonnage required by these additional furnaces; the increase in the lake transportation facilities by the purchase of two additional 11,000-ton ore steamers; and by the T. C., I. & R. R. Co. in opening new ore mines and rehabilitating and enlarging the capacity of its blast furnaces. There was also commenced near the close of the year an extension of the cement plant at Universal, Pa., which will increase the daily capacity of this plant from 4,000 to 10,000 barrels. With the completion of this extension the annual capacity of the cement plants operated by the Universal Portland Cement Co. (a subsidiary company) will be 8,200,000 barrels of Universal Portland cement. In the year 1908 there were shipped to customers 4,138,757 barrels of cement, against 2,322,875 barrels in 1907. This increase was made possible through the completion and placing in operation late in 1907 of plant No. 4, at Buffington, Ind., and plant No. 5, at Universal, Pa.

CONTRACTS FOR STEEL WORKERS.

The Carnegie Steel Co. has closed an additional contract with Chicago street car interests which involves the equipment with Schoen steel wheels of the rolling stock of the entire surface car system of that city. The latest contract to be closed is that with the Chicago Railways Co., and covers a period of two years, during which the Schoen wheel will be gradually substituted for the wheels now in use by the company. This contract is in addition to the one closed by the Carnegie company with the Chicago Street Railways Co., which was announced a number of weeks ago. The requirements of the two systems over the term of the order aggregate about 30,000 steel wheels, which is one of the largest contracts in steel wheels ever closed. The Carnegie Steel Co. has also closed with the Cambria Steel Co. to equip with Schoen steel wheels the 1,214 steel cars which will be built by the latter company for the Pennsylvania railroad. About 10,000 wheels will be required.

The report of the Otis Elevator Co. for the year ending Dec. 31, shows net earnings of $832,773, a decrease of $163,331. After the preferred dividends were paid, a balance of $454,398 was left. For the year, a surplus of $50,000 is credited, a decrease of $111,934. The total surplus stands now at $1,884,424.

RETIRING SUPERINTENDENTS HONORED.

Hugh McCulley and Wm. M. Brobeck, who retired March 1 after many years connection with the Jones & Laughlin Steel Co., were given a reception by their employers and former associates at the old Pittsburg Mercantile Co. building, Twenty-seventh and Carson streets, Pittsburg, Saturday afternoon, March 13. Expressions of best wishes were given, and both men were made the recipients of handsome gifts as tokens of the esteem in which they were held. The heads of departments and superintendents of the several plants of the Jones & Laughlin Steel Co. presented Mr. McCulley with a horse and phaeton. The workmen of the machine shop gave him two beautiful leather chairs. The heads of departments and superintendents of the Jones & Laughlin Steel Co. gave Mr. Brobeck a pair of handsome leather chairs while the employes of the shop presented him with a gold watch and chain.

When he retired, March 1, Mr. McCulley was superintendent of the cold rolled department and had spent a continuous service of nearly 41 years in the employ of the company. He began his career with the company in September, 1868, as a machinist; he afterwards was selected to travel about the country and erected many of the early cotton mills. He was later transferred to the superintendency of the spike and bolt factory, a position he held for a number of years. In this department, he originated many new ideas in spike making. Leaving this department, he was made assistant superintendent of the various shops and afterwards was advanced to superintendent, serving in this capacity until his retirement. Mr. Brobeck, superintendent of the cold rolled and cold drawn departments of the Jones & Laughlin Steel Co., retired March 6, 1909, after a service of nearly 41 years. He started as a machinist in September, 1868, afterwards being sent over the country to erect many of the early cotton mills for the company. About 1884, he was made superintendent of the cold rolled and cold drawn departments, which position he held up until his retirement.

COKE CONDITIONS.

Some restriction in coke production in the Connellsville region is being put into effect owing to the curtailed demand. Geo. B. Irvin, secretary of the Coke Producers' Association, in his latest review of coke conditions, reports as follows:

Reports of operations of 37,849 coke ovens at the end of the week, Saturday, March 6, 1909, shows 22,885 active and 14,964 idle, or 60.5 per cent of the ovens in the region in blast. During the past week, ovens aggregating 622 were banked or blown out by the furnace and independent interests and production considerably reduced. The Frick company and the plants of the furnace interests worked five days, the Rainey company six days, while the balance of the independent plants averaged a little less than five days during the week. Shipments from the 22,885 ovens last week fell off 376 cars compared with the week before.

Our reports show that the Frick company is operating approximately 59 per cent of its ovens, the furnace interests 75.1 per cent and the independent interests 58 per cent.

The banking and blowing out of four furnaces by the Republic Iron & Steel Co. affected several plants in the region.

SOUTHERN STEEL REORGANIZATION.

(Special Telegram.)

New York, March 17.—The Southern Iron & Steel Co., incorporated yesterday at Trenton, will take over properties of the Southern Steel Co., which will be sold under foreclosure April 12. Incorporators represent the same bond holders as are behind reorganization committee including Daniel G. Boisssevain, secretary of this committee. The capitalization is $7,000,000 preferred and $10,000,000 common which will be exchanged for ten millions preferred and fifteen million common in the old company. A bond issue of ten million will be made to retire the six million old bonds, cancel debits and provide working capital.

UNION SWITCH AND SIGNAL CO.'S ANNUAL MEETING.

The annual meeting of the stockholders of the Union Switch & Signal Co., Pittsburg, took place March 9. Owing to the absence of George Westinghouse in Europe, Colonel H. G. Prout, vice president of the company, acted as chairman. The financial statement was read to the stockholders and the election of directors was held, resulting in the choice of the following: George Westinghouse, Robert Pitcairn, William McConway, Geo. C. Smith, Thomas Rodd, H. G. Prout and Jas. J. Donnell.

The Pennsylvania Steel Co. blew in its No. 3 stack at North Lebanon, Pa., March 4. No. 1 stack has been blown out for repairs.

AMONG MACHINERY MAKERS.

MILWAUKEE.

Wages of Allis-Chalmers Employes Will Not Be Reduced.

Milwaukee, Wis., March 15.—The fact that few, if any, machinery manufacturers of Milwaukee will decrease their wage schedules, despite the stand that is being taken in this matter by some of the eastern manufacturers, is taken as a sign that conditions in general in the Milwaukee field are much improved. The announcement has been made by President W. H. Whiteside of the Allis-Chalmers Co., that the employes of this company would not be affected in the slightest degree by the action of some eastern manufacturers.

"While many of the steel corporations are reducing their wage scales, there will be no cut among the employes of this company," said Mr. Whiteside. In reply to the question as to what he thought of trade conditions, President Whiteside said:

"The only thing on our commercial horizon today is the tariff question, and that will be settled in a short time. This has been a year of fits and starts, but the atmosphere has cleared and as soon as the tariff is out of the way, conditions will again settle down to a normal basis. While the tariff schedule will probably be modified some, it will not be enough to affect the steel business generally. There is a healthy business outlook."

Plans have been completed by the J. I. Case Threshing Machine Co., of Racine, Wis., for the erection of a new warehouse to cost $50,000. The structure will be three stories, 400x240 feet and will be equipped in the most modern manner, including automatic fire sprinklers. The annual meeting of the stockholders of the company was held recently, when all of the former directors were re-elected.

The policy of the open shop has been followed by the Manufacturers' Association of Kenosha, Wis., during the past year and has been found to be a great success. The plan has worked out so well that the contractors are now asking the manufacturers to allow them to be affiliated with the organization. The annual meeting of the Manufacturers' Association was held recently at which every factory in the city was represented. Reports showed that the manufacturing plants represented in the association had during the past year employed a total of more than 8,400 men with an annual payroll of more than $5,000,000. Officers were elected as follows: President, Thomas B. Jeffrey; vice-president, Z. G. Simmons Jr.; secretary, W. L. Yule; assistant secretary, Conrad Shearer; treasurer, Herbert L. Shearer.

Kahlenberg Bros., of Two Rivers, Wis., are meeting with much success in their building of gasoline engines. Two four-cylinder, 60 horsepower engines have just been completed for installation on lake craft, and several engines are now under course of construction to fill orders from various sections of the country. Several new labor saving machines have been installed in the Kahlenberg plant recently.

CINCINNATI.

Machine Tool Business Unsettled—Number of Workers Increases.

Office of THE IRON TRADE REVIEW, First National Bank Bldg., March 16.

The machine tool trade continues in a hesitating and unsettled state. The few purchases made appear to be subject to careful investigation and salesmen find difficulty in bringing interested buyers to the purchasing point. Orders have not materially increased and the first half of March finds the business dull in the machine tool line. Makers of ice machines have enjoyed an exceptionally good business since the first of the year and automobile plants are reported busy, but aside from these two special lines the call for machinery is limited. It is encouraging to note, however, that in the last quarter the working forces in Cincinnati shops of metal working industries have increased 15 per cent over the preceding quarter, according to the report of the secretary of the Cincinnati Metal Trades Association. Valve makers are reporting business good. The improvement thus shown in some special lines gives encouragement to the view that a revival in machine tools may not be long delayed. It is still believed that the agitation concerning the tariff revision has had considerable effect in suspending orders.

Federal Judge Lurton has this week made an order granting the receiver of the C., H. & D. Ry. authority to enter into a contract with the American Locomotive Co. for the purchase of ten switch engines. The B. & O. S. W. Ry. is in the market for a small list of machine tools. The Big Four is figuring on some spikes, which gives indications of some pick-up in railroad purchases.

The Triumph Electric Co. is proceeding as rapidly as possible in the building of its new plant in the factory colony district. The foundations are in and considerable of the material is on the ground. The company is extremely anxious to get into its new plant, its business having completely outgrown the old quarters. The company is having an exceptionally heavy run of business in its ice machinery department, having booked over $250,000 worth of business since Jan. 1.

A meeting of the Stove Dealers' Club has been called for March 29, to be held in Richelieu hall. This club is composed of local retailers of stoves, but the stove manufacturers are to be invited to be present at the meeting. The subject to be discussed particularly is to protest against the retail stove business of the Union Gas & Electric Co.

PITTSBURG.

Buyers Waiting for Tariff and Other Developments.

Office of THE IRON TRADE REVIEW, 510 Park Bldg., March 16.

In general terms the machinery situation has not been altered, although in some lines a better inquiry has been noted during the past several weeks. This inquiry has not, however, resulted in much business being placed, as buyers are still cautious of their obligations and are waiting for the business situation to be further clarified before making purchases. Makers, however, generally look for some improvement when the tariff schedules are better known, and sentiment is more settled.

In cranes there is a very limited business going either in electrical travelers or locomotive machines. There is some inquiry now out, however. A contract of the week in this line was that awarded by the De-Forest Sheet Steel Co., Niles, O.

The Duff Mfg. Co., Pittsburg, has taken control of the new forged steel hydraulic jacks which have been developed by the Bethlehem Steel Co., South Bethlehem, Pa., and has added this type to its line of lifting jacks.

Considerable machinery will be purchased by the Fort Pitt Forge Co., Pittsburg, to replace the equipment

damaged by fire in that works March 10. The blaze was originated in a nearby oil refinery, communicated to the machine shop and store room of the forge plant and caused about $10,000 damages in these departments. The rest of the plant did not suffer. Work upon the reconstruction of the burned buildings was begun this week and will be rushed to completion. The fire will not interfere with the company's filling its orders in regular time.

The Allegheny Valley Malleable Iron Co. has begun operations in its new plant at New Kensington, Pa. The works, which are large and strictly modern in all respects, will be devoted to the production of a general line of malleable castings. The melting equipment consists of two reverberatory furnaces with capacity of 80 tons. The dimensions of the different buildings of the plant are as follows: Foundry, 80 x 440 feet; annealing shop, 100 x 300 feet; pattern shop, 50 x 50 feet; pattern storage, 50 x 100 feet; core room, 50 x 100 feet; power house, 48 x 60 feet. The general offices of the company are located in the Frick Building Annex, Pittsburg.

The DeForest Sheet Steel Co. has awarded to the Morgan Engineering Co., Alliance, O., the contract for the cranes for its new sheet and tin plate plant to be built at Niles, O. Two machines, one 15-ton and the other 30-ton, of the electric traveling type, will be furnished. The contract for the six sheet and six tin mills has not yet been awarded.

SEATTLE.

Sales of Machinery Satisfactory—New New Plants to Be Built.

Office of THE IRON TRADE REVIEW, 302 Pioneer Bldg., March 5.

Sales of machinery on the Pacific coast both for new plants and for extensions and improvements in old shops continue to be good. While the general iron market is in a somewhat hesitant condition owing to the lower prices announced in the east, the machinery trade is holding up its end in good shape.

The Idaho National Harvester Co. announces through its manager, G. O. P. Mix, that work will begin in April on four brick and stone factory buildings to cost $40,000. The plans for the new plant, which will manufacture harvesting machinery, show a foundry 40 x 61 feet, with a cupola addition 20 x 30 feet, two stories; a machine shop 36 x 100 feet, one story; woodworking and assembling shops, 40 x 100 feet, one story; paint shop 40 x 90 feet, one story and an office 25 x 40 feet. The present plant of the company represents an investment of $25,000.

The Spokane Ornamental Iron & Wire Works, Spokane, Wash., will increase its capital stock from $25,000 to $100,000 to provide for the cost of a new plant which will be built this year. The company has bought a site, 142 x 142 feet, at Second avenue and Arthur street, Spokane, on which will be erected a modern foundry for ornamental iron and bronze castings.

The Spokane Harvester Co., Spokane, Wash., announces that orders for harvesting machinery from the eastern Washington trade are coming in in good shape and that the plant is now running at full capacity. The company is making minor improvements in its plant and is preparing for a busy season.

The Lake Whatcom Logging Co., J. J. Donovan, manager, Bellingham, Wash., has purchased a new logging locomotive. The new locomotive was made in New York and is considered one of the best of its kind in the United States. It cost $12,000. The same company is also buying rails and track supplies for the extension and improvement of its logging railroad.

The Phoenix Iron Works, Portland, Ore., is preparing to build a new plant on the block between East Third, East Fourth, Mill and Stevens Streets, Portland. The new plant will consist of three buildings, a factory, machine shop and pattern shop, besides the storage and office facilities. The foundry will be 80 x 150 feet, the machine shop 80 x 100 feet and the pattern shop 30 x 60 feet. A new cupola, traveling crane and considerable other new machinery will be purchased.

It is announced that the West Coast Wagon Co. will erect a fabricating plant on Marshall road on the Tacoma Tidelands, Tacoma, Wash.

The Gilbert Hunt Co., Walla Walla, Wash., will erect a small machine shop at Colfax, Wash.

The DeForest Sheet Steel Co., and the Thomas & Taylor Co., Niles, O., have filed with the commissioners of Trumbull county a petition asking that the site of the proposed plant be detached from the city in order that the plant may be entirely in the township thus escaping the higher city tax rate. The city council of Niles has already passed an ordinance permitting the relinquishment.

NEW YORK.

Inquiries More Numerous, But New Business Still Lags.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., March 16.

Here and there in the machinery trade some slight increase in business is reported, but for the most part the situation continues in the same inactive condition which it entered soon after the beginning of the year. Testimony is general as to the improvement in inquiries, not so much in the machine tool trade as in equipment and power work, but so far this betterment in inquiries has not resulted in any appreciable increase in buying. The volume of tenders outstanding is growing steadily in a great many lines, but it is generally reported as extremely difficult to close up any propositions of importance. Certain lines which are not dependent entirely upon the iron and steel industry are doing fairly well; crane builders, for instance, are booking a considerable number of small orders of late for ice plant installation, and in one instance, the Shepard Electric Crane & Hoist Co., a full force is now employed and the shops are running overtime. Power plant equipment concerns have been rushed in their estimating departments of late, but have taken few orders of importance. Practically the same conditions prevail in regard to industrial cars; some of the propositions pending involve large figures, but the few orders which are being closed are never large. Machine tool plants for the most part are operating on about the same scale as at the beginning of the year. There are exceptions to the general inactivity, however, one of them being the Henry & Wright plant at Hartford, which is running full time and has its output of drills booked considerably ahead.

The Howard Automobile Co., Trenton, N. J., has recently been in the market for a moderate sized equipment of machine tools and has placed its order with the Vandyck-Churchill Co. for a shaper, lathes, milling machines, drill presses and a few other tools.

A list of tools has been circulated recently by the Wonham-Magor-Sanger Co., 30 Church street, for additional equipment of the company's manufacturing plant at Passaic, N. J. It is understood that this interest has recently booked some very attractive orders for supplying the local traction companies with safety fenders.

The Spooner-Mathewson Co., 90 West street, has taken the agency in this territory for the Connery Co.,

Philadelphia, making a specialty of steel plate construction work. The Spooner-Mathewson Co. has secured the order for a large smokestack to be installed at York Haven, Pa., for the York Haven Paper Co.

The New York Edison Co. has been placing a few orders for machine tools of late, but this buying has not been of important proportions, being merely for scattered replacement work.

The Reading Iron Co., Reading, Pa., is arranging to overhaul its Emaus furnace, adding a number of improvements, and to construct a large additional pipe mill. The engineering work is being done by F. C. Roberts & Co., Philadelphia.

Encouraged by the success which attended its first effort in this direction, the entertainment committee of the Machinery Club arranged a second smoker for the afternoon of March 13, limiting it to members and one guest for each, as the responses to the more general invitation for the January smoker overtaxed the capacity of the club quarters and its service. The March affair, with music during luncheon, songs and a bit of vaudeville, proved an extremely enjoyable occasion.

The Waters-Gildersleeve-Colver Co., 45 Broadway, which was organized only a short time ago, has acquired the business of the Frederick A. Verden Co., operating a ship yard, dry dock and marine railway at West New Brighton, Staten Island. The Verden Co. started in business in New Jersey in 1886 and about six years ago removed to Staten Island, and acquired a water frontage of 600 feet.

Circulars are being sent out by F. D. Mitchell, 309 Broadway, as secretary of the American Supply & Machinery Manufacturers' Association, calling attention to the two joint meetings of the supply and machinery men early in May. At Chattanooga, May 5-7, the Southern Supply & Machinery Dealers' Association will meet with the manufacturers, headquarters being at the Hotel Patten. The following week, May 12-14, the National Supply & Machinery Dealers' Association will meet with the American association at Pittsburg, headquarters being at the Fort Pitt Hotel. The three associations held a joint meeting at Richmond a year ago, but this year this plan has been modified as above indicated.

Atlantic stack of the Republic Iron & Steel Co., at New Castle, Pa., and Hall stack of the same company at Sharon, Pa., have been blown out.

MAKING PROGRESS

In Various Lines—Annual Meeting and Dinner Cincinnati Branch, N. M. T. A.

The annual meeting and regular quarterly dinner of the Cincinnati Branch of N. M. T. A. was held at the Business Men's Club in Cincinnati on Thursday evening, March 12. John W. Neal, of the J. H. McGowan Pump Co., president of the association, presided. Mr. Neal briefly reviewed the year's work of the association and thanked the membership and committees for their assistance and support during his term of office. He referred feelingly to the loss by death of two members during the year, Carl Lunkenheimer and John H. Day.

John M. Manley, secretary of the association, presented an interesting report of the last year, referring to the reduced number of operatives in the shops; but stated that during the last quarter there had been an increase of 15 per cent as compared with the preceding quarter in the number of operatives employed in the shops of members, which indicated that business was improving. He referred to the success of the annual outing of the association last summer, and urged upon the association a continuance of this feature. There have been no strikes during the year and the work of the association has been more along the lines of creating a better feeling and understanding between the employer and employe. The success of the co-operative engineering course, which has received the hearty endorsement of the association, and the gift of Mrs. Emery providing for the construction of a new building for the Ohio Mechanics' Institute were referred to as matters indicating the progress being made in Cincinnati for the education of young men and of the opportunities afforded both for the student and for the young men compelled to secure an education while employed as a wage earner.

J. C. Hobart of the Triumph Electric Co. made the report of the committee on constitution reciting the efforts of the committee and the time devoted to the careful study of the amendment to the constitution upon which the committee finally reported favorably and which the membership voted for. While the committee was not entirely in accord with the changes, it was decided best to pass favorably upon the new form of constitution in order to strengthen the hands of the national association.

The nominating committee submitted names for officers for the ensuing year, and the following were elected: John W. Neal was re-elected president, and B. B. Quillan, of the Cincinnati Planer Co., vice president; Henry Ritter, of the Lunkenheimer Co., was elected treasurer; L. G. Robinson, of the J. A. Fay & Egan Co., secretary; A. H. Tuechter, of the Cincinnati Bickford Co., E. H. Hargrave of the Cincinnati Tool Co., and A. E. Robinson of the American Tool Works Co., were elected members of the executive committee.

E. H. Hargrave, chairman of the entertainment committee, made a brief report of the work of that committee during the past year referring mainly to the summer outing.

The business of the evening having been concluded Mr. Neal introduced Hon. Herman P. Goebel, congressman from the second Ohio district, who spoke on the subject of "Our Merchant Marine and Ocean Mail Service." Mr. Goebel very clearly presented arguments in favor of a ship subsidy and pointed out the advantages which would accrue if we had an adequate merchant marine, and pointed out the difficulties now confronting us in the transportation of mail by reason of the decadence of our merchant marine.

Alfred H. Post, of Alfred H. Post & Co., of New York, head of one of the largest freight forwarding companies in the country, addressed the meeting on "Co-operative Freight Traffic," presenting strong arguments in favor of the consolidation of less than carload shipments to be forwarded at the carload rate. He pointed out that the ownership of the property had no part in determining the railroad rate and that the carrier performed no more service on a combined shipment in carload lots than on regular carload traffic. The refusal of the carrier to permit consolidated carloads resulted in compelling a higher transportation cost, which practically amounted to an increase in the cost of production and thus became an economic waste. Mr. Post made a strong plea for organized sentiment to impress upon the interstate commerce commission the demand on the part of the shippers for the right to combine less than carload shipments and forward at the carload rate.

Commissioner Robert Wuest of the N. M. T. A., was the next speaker. He advised the Cincinnati Branch that B. B. Quillan had been nominated to serve on the administrative

council of the national association for the ensuing year, which gives the Cincinnati Branch two members of the administrative council. Mr. Wuest urged upon the members the importance of the labor bureau feature of the local branches and urged that with reviving business, manufacturers, members of the association, use the labor bureau to the fullest extent.

William Lodge, of the Lodge & Shipley Machine Tool Co., responded to the toast "Our Presidents," and gave a brief history of the beginning of the organization and some interesting accounts of the strenuous days of 1900 and 1903, during the presidency of Walter Laidlaw, when it was found necessary to close the plants for two months to break a strike.

J. C. Hobart, of the Triumph Electric Co., was called upon to speak on the membership. He pointed out that, while the association had always been well officered, the officers could have been of but little use without the harmonious support of the membership, and this has been the strength of the local association. In spite of individual differences, discussion has usually resulted in practically unanimous action, and thus the officers have had the support of the members. During the peaceful period of the last few years, the association's work has been directed toward stimulating ambition in the employes and increasing output without increasing the cost of product.

The meeting was closed by Ben Sebastian, of the Sebastian Lathe Co., who thanked each of the speakers in turn for the addresses and the instructive and entertaining evening afforded.

Canadian Minerals.—The preliminary report on the mineral production of Canada in 1908, issued by the Canadian department of mines, gives the total value of the year's output at $87,323,849, as compared with $86,842,765 in 1907. Pig iron from Canadian ore was produced to the amount of 99,420 tons, valued at $1,664,302, as against 107,599 tons valued at $1,982,307 in 1907. No exports of iron ore appear on the list, this item for 1907 being 25,901 tons of the value of $45,907. The total production of pig iron in Canada in 1908 from both Canadian and unworked ores, according to returns fram mine plants, comprising 16 furnaces, was 630,835 tons of the value of $8,111,194, as compared with 651,962 tons, valued at $9,125,226 in 1907.

CONDITION OF WORKERS

In the Pittsburg District—Last Section of Report of Investigators.

In the third installment of the results of its investigations which is published under the general classification of "The Work" in the March number of *Charities and The Commons,* The Pittsburg Survey presents interesting information bearing upon the working conditions of that industrial community.

An article by John Andrews Fitch on "The Steel Industry and the Labor Problem," represents a view of labor conditions in the steel industry of Allegheny county and vicinity. Speaking of the working day in the mills, the writer says:

The eight-hour day does not flourish in the steel mills. After 10 months' residence in the Pittsburg district and careful search throughout that time for the facts of the industrial situation, I can state with assurance that with the exception of the sheet mills, the eight-hour day is to be found only in the Bessemer departments. There are exceptions to this rule, as in the case of the 45 rail straighteners at the Edgar Thomson plant at Braddock, who work in three shifts with 15 men in each shift, but generally speaking the eight-hour day is confined to the one department where the Bessemer converters are operated.

Here the men who are exposed to the greatest heat usually work in three shifts; but their number is not large. After careful inquiry, in which I talked with all grades of workmen and with men in authority, I could find only about 120 eight-hour men in 1907 among the 17 000 employes in the three largest plants of the Carnegie Steel Co. in Allegheny county, a trifle less than ¾ of 1 per cent. This was when the mills were running full, before the financial depression.

The prevailing working day is 12 hours for steel workers, that is, for the men who are actually engaged in the processes of manufacturing and working steel, skilled and unskilled workmen alike. The yard laborers and machinists are the apparent exceptions. The former are supposed to do day work and to do it on a 10-hour basis, but their hours vary with the demands of the season. A night shift is put on when orders are heavy, and the working day is extended. It is probable that with them overtime is the rule rather than the exception in prosperous times when all departments are crowded; and such conditions governed generally in the mills for the four years previous to November, 1907. To illustrate, in October of that year, as I learned from an authoritative source, the yard men in a blast furnace plant earned about $2 a day. They are paid at the rate of 16½ cents an hour, and to earn that amount they must have worked about 12 hours a day.

The familiar "speeding up" policy which has characterized the organization of the mills in their efforts to attain high tonnage records, is discussed. Mr. Fitch says on this point:

The tendency of the present day conditions seems to be in the direction of increasing the intensity of physical exertion in the mills. This has been the trend for 25 years past. The output of rolls and of furnaces has doubled or trebled in that time—a matter of record which can easily be verified. A hoop mill in Pittsburg in 1892 produced 450 bundles of cotton ties in eight hours, on a single train of rolls. In 1908, a train of rolls in the same mill was producing 1,300 bundles in 11 hours—an increase of over 100 per cent per hour. A blooming mill in one of the Pittsburg plants that was rolling 300 to 400 tons in 12 hours, 15 years ago, is rolling now 900 to 1,200 tons in the same time. Twenty years ago, the Edgar Thomson Steel Works were turning out 600 tons of rails in 24 hours and the plant was considered one of the best in the world. At present, mill No. 1 in this plant has a capacity of 100 tons an hour and an average of 2,000 tons in 24.

It is declared that the expected result of this tendency toward large output has been a reduction in the rate of pay per ton of product during the past 15 years. The actual earnings of skilled workmen in the steel mills, it is estimated, have declined from 20 to 50 per cent since 1897. The unskilled laborers, however, have not shared in this reduction, but in fact have enjoyed increases of wages.

Wage matters are reviewed by John R. Commons, professor of political economy, University of Wisconsin, in an article "Wage Earners of Pittsburg." The condition of the common day laborer in the community, which is largely a statement of the life and characteristics of the foreign immigrant, is spoken of as follows:

When he is free to make his own bargain with the employer, and competition is unrestricted, the Pittsburg laborer without skill or command of English gets in prosperous times $1.35 to $1.65 for a day of 10 hours. Outside Pittsburg, in the mills and yards, 16½c an hour seems to be the prevailing rate for the kind of work done by the Slav immigrant, but in Pittsburg proper 15 cents is more generally paid for such labor. Jones & Laughlin, on the South Side, can hire Slavs at 15 cents when Homestead and the mill towns pay 16½ cents. The difference is due to the greater congestion of immigrants in Pittsburg, the place of their first arrival, and to their preference for the city with its agencies for employment and its fellowship and support when looking for employment.

Concluding, Prof. Commons compares the iron and steel with the mining industry and shows the relative

positions of the different classes of labor in these lines of production.

Other subjects treated in the March issue are "The Process of Steel-Making," "Households Builded upon Steel," "Factory Inspection in Pittsburg," "The Industrial Environment of Pittsburg's Working Women," "One Year's Work Accidents and Their Costs," and "The Elementary Public Schools of Pittsburg." With the March number *Charities and The Commons* completes its presentation of the findings of the Pittsburg Survey. The matter previously published was under the general headings of The People in the January and The Place in the February numbers.

INJUNCTION

Stops Contracting for Indianapolis City Hall.

Indianapolis, March 13.—An unexpected obstacle has been met in the proposal to build a city hall, by a suit for an injunction against letting the contract brought by the Marion County Tax Payers' League. It is claimed that the building is overloaded, that the foundations are too large for the size of the building and that the specifications are not clear. However, bids have been opened and are being held pending a hearing on the temporary restraining order granted. Lowest bids on the general contract were Alling Construction Co., Chicago, $514,000, with a promised reduction of $15,000 if reinforced concrete and steel are substituted for granite; Westlake Construction Co., St. Louis, $519,900; Henry Dollman, Indianapolis, $524,000; William P. Jungclaus & Co., Indianapolis, $529,875, and Lynn B. Millikan, Indianapolis, $558,846.

Quite an important victory has just been gained by local iron and steel manufacturers, in gaining a stop-over privilege on structural steel. The railroads have decided to allow it and the privilege is to be included in a new schedule that will soon go into effect. This means that steel originating in other fields can be billed through to points beyond Indianapolis, but held over here to be fabricated. This will enable local manufacturers to compete with bidders from all parts of the country, and will mean employment for several hundred men in the local plants.

The Roof Engine Co. has organized at Muncie and will manufacture gasoline engines and a small line of machinery. The capital stock of $30,000 is held principally by R. M. Roof, J. M. Quick and Frank E. Hill.

A four-story warehouse and repository, containing 100,000 square feet of space and to cost about $100,000 is to be erected in this city by the Studebaker Brothers Mfg. Co., of South Bend.

A line of computing and other scales will be manufactured by the Angidile Computing Scale Co., of Elkhart, which has just been organized with $300,000 capital stock. The directors are J. W. Cochran, P. M. Cochran and M. T. Cochran.

EUGENE J. BUFFINGTON.
(President of the Illinois Steel Co. and Indiana Steel Co.)

MR. BUFFINGTON'S CAREER.

Eugene J. Buffington, for whom the steamer launched March 6 was named, is chief executive of the western subsidiaries of the United States Steel Corporation, the Illinois Steel Co., and the Indiana Steel Co., and is still a comparatively young man. He was born March 14, at Guyandotta, W. Va., and the launching of the boat named in his honor is almost a celebration of his 46th anniversary. His early education was acquired in the public schools of Covington, Ky., and at the Chickering Institute in Cincinnati. Later he was a student at Vanderbilt University at Nashville, Tenn. Mr. Buffington engaged in the manufacture of wire and wire nails and at the time of leaving that department of the steel business was associated with the American Wire Nail Co. of Anderson, Ind. When that company together with the Cleveland mills was absorbed in the formation of the American Steel & Wire Co., Mr. Buffington was chosen treasurer of the American Steel & Wire Co. In this capacity he remained until the formation of the Illinois Steel Co., to the presidency of which he was elected in 1899. It has been a field of exceedingly rapid development with which the plants under Mr. Buffington's direction, have been required to keep pace and his administration has been largely one of new construction and organization. The formation of the Indiana Steel Co. and the building of the steel plant at Gary he has been associated with, with especial distinctness and it was very largely due to his vigorous pioneering and presentation of the demands of the western territory that this the most modern steel plant in the country was built.

PRODUCTION OF MALLEABLE CASTINGS—XII

The Construction and Operation of Annealing Furnaces and Methods of Charging and Discharging the Annealing Pots

By Richard Moldenke

A radical change in the oven construction was devised by the author in building the works of the Pennsylvania Malleable Co., McKees Rocks, Pa. It was perhaps a rather bold departure. Thirty ovens of very large size were dropped into an immense concrete box, on account of occasional danger from high water. No braces of any account, the tops removable in sections, the simplest kind of construction, no tiles whatever being used, and an overhead crane to do the work. The result was that the annealing cost was practically cut in half, and today the connecting wall of every second set of ovens has been taken out giving a single oven some 40 feet long, 11 feet wide and 10 feet high, fired at both ends, and working with a variation of but 50 degrees Fahr. throughout the entire interior. Fig. 2 shows these ovens in their pit, and one of the top sections suspended from the crane. In Fig. 3 are shown four pots being conveyed by the overhead crane.

But the old style of ovens has also experienced improved methods of charging, the old system trucks finally being provided with power. This is shown in Fig. 4 which explains itself. The pots shown were, however, merely put on for the photograph, as they are not luted up or covered. Fig. 5 shows the method of transporting the pots within reach of the charging machine, the ovens being without the sphere of action of the crane. Fig. 1 gives an excellent view of the interior of an annealing room. There will be seen first, the iron floor plates, then the heaps of scale, in the middle ground two completed pots on their stools, the annealing boxes, bowed out in the middle through the action of heat and interior pressure of the charge. Finally, the oven fronts with the doors on hinges, some of them open.

Construction of Annealing Ovens.

The construction of the ovens is in the main simple. Fig. 6 shows a very good oven arranged for firing with coal. Ovens when built above ground must be tied together well, as they would otherwise soon go to pieces by reason of the expansion and contraction from successive firing. As a rule, they are used until they nearly collapse, and then a few more heats are taken from them on general principles. This is not very good for the castings within, as the variation in temperature must naturally become greater.

In the construction of an oven, the basic principle is the introduction of the heat from one convenient point, the spreading of that heat in a uniform manner, the holding out of as much free air, or in other words unconsumed oxygen as possible to save the pots, and the quick heating and very slow cooling of the oven itself. It is therefore necessary to have the combustion space for the fuel no larger than absolutely necessary, the draft regulation perfect, the bottom of the oven underlaid by a series of flues which allow the gases to circulate before going up to the stack, and thus get all the waste heat for use that it is possible to obtain without complicating the construction too much. It

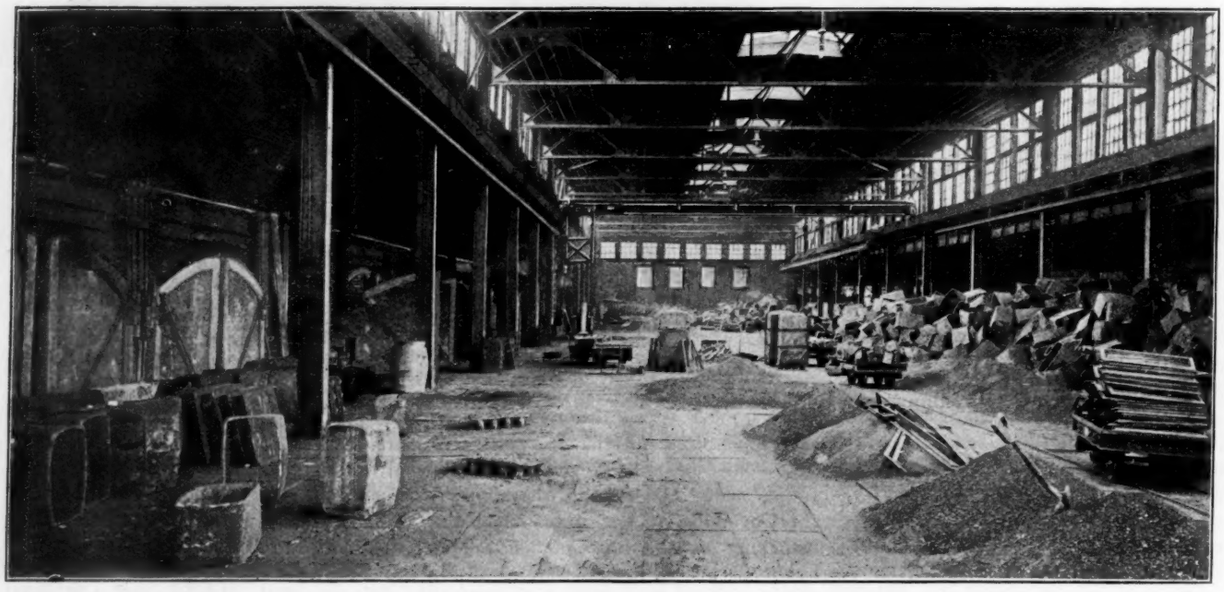


Fig. 1—Interior View of a Large Annealing Room

FIG. 2—ANNEALING FURNACES LOCATED IN A CONCRETE PIT BELOW THE GROUND LEVEL. FROM THE CRANE IS SUSPENDED A SECTION OF THE FURNACE TOP

is not necessary to put flues in the sides or the top, as has been done, for the instability of the structure, unless heavily braced, makes this undesirable.

With a series of 12 ordinary ovens above ground and four of these sets, each connected with a large stack, the waste heat was found to be so little that a concern that wished to put in hot water heaters for the boilers did not care to attempt the work. In fact it would probably have destroyed the draft had this firm been allowed to do the work.

A 4-inch lining of first grade fire brick for the sides, and 9-inch for the top, with common red brick for the outside is sufficient for the annealing ovens. Where the removable tops are used, one thickness of arch brick on end, nine inches, alone is necessary, but the tops get pretty hot during the run. With so simple a construction, annealing ovens are not expensive, and it pays to have enough of them, so that the melting capacity of a works may not have to be curtailed while repairs are being made.

While Fig. 1 shows the doors of the annealing ovens hinged, this is seldom done, as the great weight of the construction tends to rack the oven. The doors, made in two sections for each oven, are usually handled by the truck similar to the pots. As the floor of the regular style oven is always laid with tiles, the cost for repairs on account of the damage done by the wheels of the trucks, is quite an item.

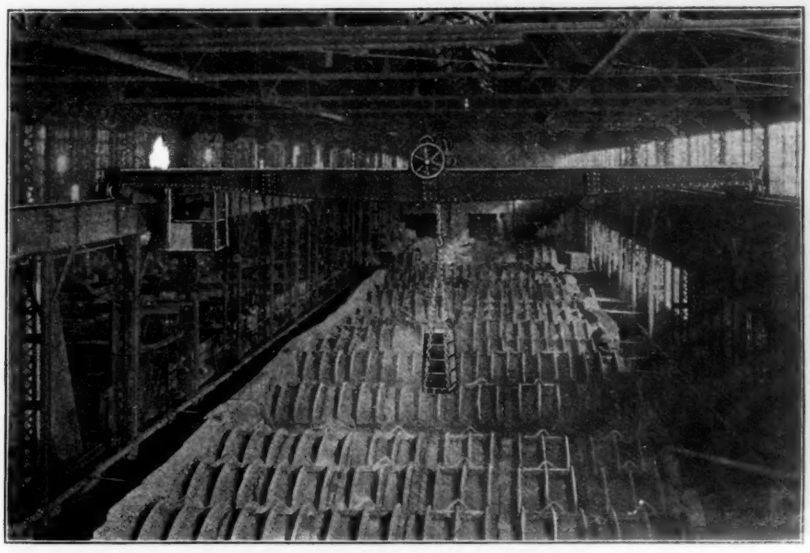


FIG. 3—FOUR CHARGING POTS SUSPENDED FROM AN OVERHEAD TRAVELING CRANE

Firing End of the Oven.

The firing ends of the ovens are always built internal, in order to prevent undue loss from radiation. A good long flame is desired, the ends of which come over the top of the fire box, and are deflected forward by the roof. With a good construction, when the oven is up to heat, only a foot of flame should appear over the top, and the dampers should be almost shut. The ideal fuel is natural gas, and with this it is simply necessary to arrange for three pipes into the fire box, loose brick closing up the entrance just sufficiently to furnish the necessary air for proper combustion. A very important item in this connection is the pressure of the gas, and consequent air supply necessary.

An elaborate series of tests made by the author to determine the difference of gas used at the ordinary fluctuating pressures of the city supply (between four ounces and 1½ pounds) and the same gas governed mechanically and issuing at two ounces, gave some interesting results which have a bearing on other methods of firing. The gas in the case of variable pressures was let into the oven fire boxes through three ¾-inch pipes, while the governed gas had three 2-inch pipes to issue from. The consequence was that with the larger pipes and slower flow of gas, this mixed with the air better and gave a good flame which rolled into the oven lazily, whereas the high pressure gas drew in a lot of unnecessary air, which tended to oxidize the pots unduly.

Results of Tests.

Among the results obtained with a large series of boxes carefully marked and watched, the following is of special interest. Three sets of pots, with boxes three-high each, were placed into an oven, with the gas not governed, the first in the presumably hot-test place, or close to the fire box. The second set was placed in the center of the oven, or likely the average of temperature. The last set was located in the front row, or coldest point of the oven. These places were retained throughout the trial, the boxes kept in their relative position from the bottom to the top of the pot, and the pots returning to their identical points. As the boxes of the pots burned out, they were replaced by

others, but the record of the used boxes was maintained. The same thing was done with another three sets of pots, this time with the gas governed.

The hottest pots lasted respectively 11, 15 and 16 anneals for the boxes from top to bottom with the gas governed, and 6, 8 and 10 the other way. The pots placed at the center of the oven gave 11, 13 and 14, respectively, gas governed, and 7, 10 and 11 the other way. Finally the coldest position in the oven gave 16, 18 and 20 anneals for the gas governed pots, and 8, 10 and 11 for the pots with gas at variable pressure. Rather strangely the hottest pots in the gas governed oven suffered less than those in the center, whereas the reverse would be expected. Evidently this was due to the position of the pot which, while very hot was protected more from the direct circulation of the gases in that corner of the oven.

The average life of the three sets of pots in the comparative tests was 15 anneals for the gas governed series, and only nine for those in which the air currents were not kept at a minimum. The average weight of the boxes forming the pots was 316 pounds, and when wasted away too much for further use had dropped down to an average of 87.5 pounds. This shows what a large amount of money is lost by direct burning up in the annealing end of the malleable foundry, and why some of this should be saved by utilizing the flakes, after the luting has been picked out as clean as possible, for replenishing the supply of scale.

Use of Producer Gas.

As natural gas is not always available, the next best fuel is producer gas made from soft coal. This is preferable to the use of the coal direct, on account of this very wasting away of the annealing boxes when the supply of air cannot be regulated nicely, as in the case of an open coal fire. Nevertheless, the author would not recommend the installation of a producer gas plant specially for annealing purposes, unless open-hearth melting furnaces are used in the first place. It is more satisfactory and about 10 per cent more economical to work with gas, but it takes more skill, and a small plant could hardly afford the expense of the installation, while the large plants will eventually all come to the open-hearth when castings are more generally bought under specifications.

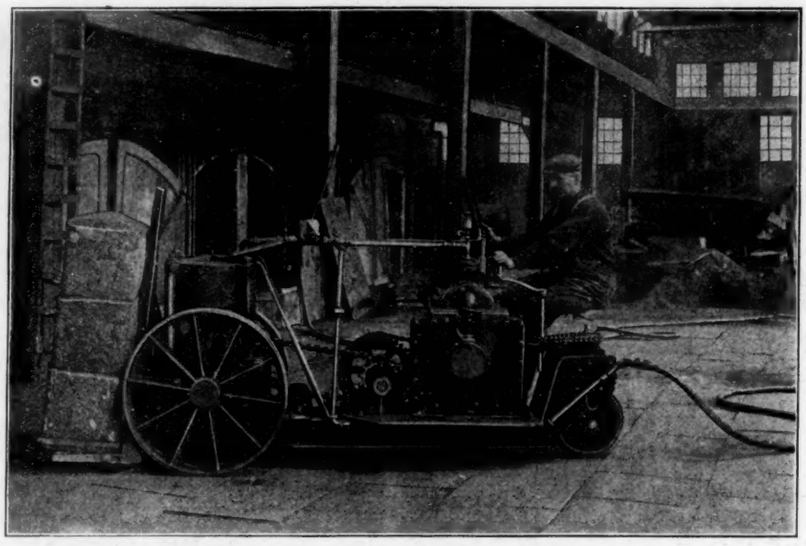


FIG. 4—PNEUMATIC CHARGING MACHINE USED FOR CHARGING FURNACES

The application of the producer gas to the annealing oven is not a simple matter as it is necessary to get a proper adjustment of air and gas for economical results. The result of much experimenting has shown that it is best to keep the fire box inside of the oven as for natural gas, and to add a gas box just outside which allows the gas to enter into the interior fire box, or practically the combustion chamber, and at the same time have the oven draft bring in the necessary air. The dampers for air and gas have two ports, should be easily adjusted and not jam if heated red hot at times. The air for each of the two gas ports should enter above them, so that the upward tendency of the gas makes it break through the air current, and thus mix well. The arrangement must be further so constructed that as little reflection backward of the heat of the burning gas acts on the fresh gas coming in, for if this gets too highly heated, soot is at once deposited and the ports are stopped up.

Use of Oil as Fuel.

Oil is also used. The author has successfully used this to the extent of many tanks for annealing purposes, with ordinary and superheated steam, compressed air, low pressure air, and direct without any carrying medium. The best results were obtained by having the oil under 40-pound pressure throughout the works, and governed, so that as the pressure went down the pump would start automatically. The oil was direct-

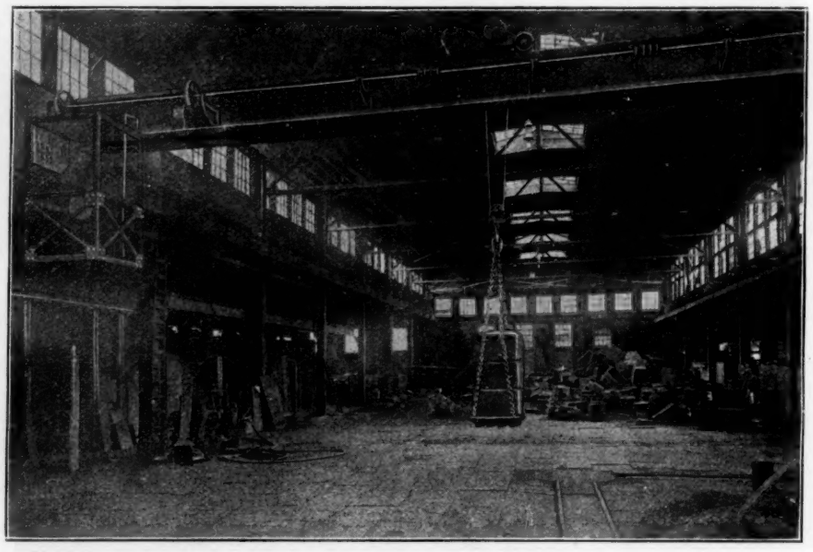


FIG. 5—METHOD OF HANDLING THE POTS WITH AN OVERHEAD CRANE

ed into the fire box of the oven through a very fine hole in the end of a ⅛-inch pipe, provided with a strainer to prevent clogging. This small oil pipe was within a 2-inch pipe, and was provided with a heavy cast iron nose on the end to retard burning off. The point thus made could be easily replaced without difficulty when necessary. Within the fire box a sisting in the combustion. The result was an intense heat, with a long flame, and very little gas carbon deposited.

In general, oil is not to be recommended for annealing purposes, as the action is intensely local, the portion of the crown right above the fire box going to pieces in very short time. However, good results are obtained so far as the castings are concerned, and where oil is cheap and coal expensive, it should be used by all means.

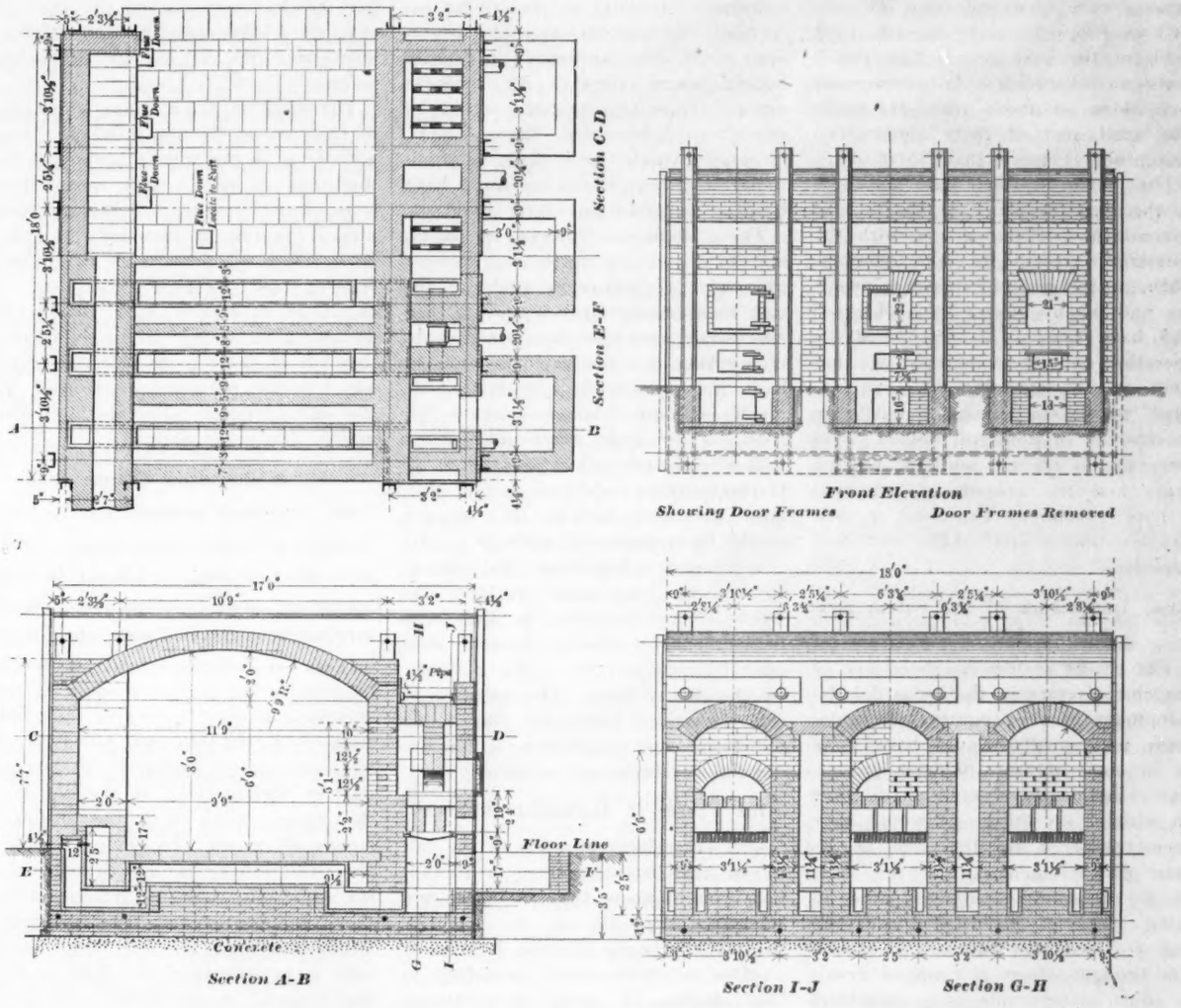


FIG. 6—PLAN AND SECTIONAL VIEWS OF THE MODERN ANNEALING FURNACE

large tile was set on end to receive the spray of oil carried by the air from a blower, and at about three to six ounces pressure. Below the tile, as well as the burner proper, and to cover the old ash pit, a floor was laid of fire brick on 2-inch pipes through which the air passed before entering the burner, thus in a small measure pre-heating it. Through this floor at the rear, openings were left, also behind the tile nose to receive the oil and spread it, through which openings air passed upward, thus as-

Use of Pulverized Coal.

Pulverized coal has also been used with success. The fuel is ground very fine and blown directly in just as oil would be. As the future, however, rather favors the gas producer, which will cost no more for installation, and is far safer to operate than grinding coal to the fineness required and storing it, it is a question whether, except in isolated cases, the direct coal firing method in dust form will form a great factor in this country. Those who have perfected its use do not say much about it, except that it works satisfactorily, but have put the matter away for the present.

Ore From Sweden.—There is now en route to an eastern furnace plant a trial cargo of iron ore from the Kiirunavaara and Glenavaara mines in Sweden, in all about 6,000 tons. This runs high in iron, being close to 68 per cent, and is low in phosphorus and sulphur. It is mined within the Arctic Circle. Two cargoes of this ore were imported by another eastern interest about three years ago and used with entire success, but with this exception none of this ore has come to America in recent years.

MAKING INVENTIONS AND GETTING PATENTS—I

Some General Facts — Do Patents Pay?

By John D. Morgan.[1]

During 1907 57,679 applications for patents were filed in the United States patent office and 36,620 patents were issued on the average, each words, over 1,100 applications for patents were filed and over 700 patents were issued, on the average, each week of the past year. This represents an expenditure in government fees alone of more than $1,600,000. The total cost of these applications was probably more than $6,000,000.

The patent system was instituted at the very founding of the federal government and has grown with the industrial growth of the country. Through the passing decades inventors and manufacturers have observed and have proved at first hand its operation and its benefits. Their answer to the question "Do patents pay?" is the investment annually in patents of millions of dollars, ever increasing in amount with the passing years and the growth of industrial activity. Opinions expressed in dollars are sincere and usually also well considered.

Basic Importance of the Patent System.

The patent system has been one of the chief factors in the industrial development of the country. Development undoubtedly would have gone on in some measure without patents. But consequently it would have gone on without invention. It would have been hampered by the lack of its most potent agencies and the want of a thousand economies now in being. In brief, invention encouraged and fostered by the patent system has brought about a ratio of result to effort so favorable as to transform the industrial world.

"Necessity" Not the Mother of Invention.

Much has been said about Yankee ingenuity, but American inventive genius, so powerfully and convincingly evidenced in the development of labor-saving machinery in old fields and in the creating of absolutely new economic agencies and the exploitation of new fields, has done its work only because inventors and promoters of successive improvements have had, through the patent system, assurance of the enjoyment of their property as certainly and securely as if they had turned their efforts to the acquirement of realty or investment securities. Without this assurance inventions would have been made only rarely except where dictated by business necessity and where there would be opportunity to keep them secret. Necessity would have made a traditional step-mother and invention have been a veritable starveling child.

There would have been no eager, searching and systematic development of scores of industries such as the past four decades have witnessed. For who would spend his time and thought in working out his problem only to have his competitor appropriate the results without labor or expense as soon as it took practicable shape and when costly effort was about to be transmuted into substantial dollars? A career such as Mr. Edison's would be unthinkable without a patent system. Invention has transformed the industrial world. The "mother" of invention is the hope of personal pecuniary reward held out to each inventor and patentee by the patent laws. The patent system above and before all else is the foundation and inspiration of our industrial greatness and prosperity.

One Factor in Industrial Program.

One other fact indicative of the value of the patent system is that it has brought about the systematic and scientific exploitation of inventive fields. This work is done largely by a class of professional inventors in the employ of great corporations. Throughout the country many of the largest and most important industrial concerns employ professional inventors and maintain extensive experimental shops and laboratories for the sole purpose of working out improvements in their particular field. In some cases the inventors are proprietors in the business. As examples of corporations having such systems may be mentioned the United Shoe Machinery Co., the Union Typewriter Co., the General Electric Co., and the National Cash Register Co., as well as many others. With such concerns improvement in their machines is not accidental or sporadic, but is worked out exhaustively and consecutively. The making of inventions and the taking out of patents are a permanent part of the business, and the expense is justified because of their importance, even necessity, as income producing factors.

The work of these shops is usually in the van of the art. Today a new welt seam is put into a line of shoes, tomorrow a better high speed steel is marketed, next a new high tension electric system is installed for traction service, a gain is made in product from a fast newspaper press and so on. The projectors have their eyes on the gain in net profits. The enjoyment of these gains is made possible by the monopoly bestowed by the patent system. The world is ultimately the great gainer.

A Backward Glance.

We have our attention so fixed on present problems and future prospects that we find it difficult to look backward along the economic highway we have traveled since the founding of our patent system. It would be bewildering and wearisome to undertake a general survey of industrial progress during that time, but a glance at some one department of activity may be illuminative. In the old days the stage coach was the ordinary means of travel. In saving of time alone the railway has substituted hours for days. In saving of transportation the difference between the two-cents-a-mile rate and the old stage coach tolls is equally marked. Add to this the financial value of the saving of time for the traveler. In the matter of comfort for the traveler think of the spacious steady riding of the railway car, of facilities for eating and sleeping. The chief agencies which have made these things possible are the new and economical processes of steel making and rail making, advanced types of locomotive design, the automatic brake, the telegraph and automatic signal systems. Detail is unnecessary. Each individual traveler who thoughtlessly buys his ticket and starts on his journey is the direct beneficiary of the thought and toil of a

[1] 220 Broadway, New York; member of the New York Patent Bar.

multitude of inventors scattered along the century.

Such a study confined to a single field shows the ever active and ever increasing wealth-saving and wealth-producing cogency of cumulative inventive effort in each field of human endeavor. This study might be carried through field after field of activity until we are wearied and bewildered by the extent of it all. One may well seek to recall the many great minds that have contributed to increase his comfort and his efficiency in the industrial and business world. No day passes but we utilize a thousand agencies born of the earnest and often life-long and bitter toil of a thousand inventors, known and unknown, of bygone days. Each has given his quota of creative work and if a wise patent system secured to him some small moiety of the wealth he has helped create, he has received only his just due. Remembering all this we begin to grasp more firmly the underlying principle that the granting of the patent monopoly for a "limited period" is a good thing not only for the inventor but for all the people and for all time.

The Individual Problem.

The man engaged in industrial business, however, is interested first in knowing whether he himself can make money through the agency of patents. The history and broad view of the patent field are doubtless good but a little remote from his every day problems and catch his attention only slightly. Industrial improvement will interest him actively only when he can realize that making improvements in his own line, when protected by patents, will be profitable to him. Some have placed improvement making on a basis at once commercial and scientific. Others have made improvements by haphazard, by inspiration or accident. Many an energetic man has given years of thought and attention to sales making and economy of management but not a single thought to improvement in machines, processes or products. He has never considered the great part inventions and patents are playing in the increase of wealth nor the possibility of their usefulness to him in securing for himself a part of that increase.

The object of these articles is to give some useful facts and suggestions for the two latter classes and to provide for all three classes some general information concerning patents which the writer has found many who have owned and profited by patents for years do not possess.

To one whose establishment does not yield improvements as a part of the present results, we would say,

Analyze the Situation.

Let him ask, "How can *I* use the patent system so that I will realize dollars from it?"

The reply is, first, ascertain whether your product or your mechanisms or any other agency vital to you, whether it be process, machine, manufacture or composition of matter, can be improved; in its design, by simplifying its parts, its mode of operation, in its properties or characteristics. Work this out in practical form and on a commercial basis. Then through patents place such improvement beyond the reach of your competitors.

Thus you secure a weapon in the business fight which is peculiarly your own and which lifts you out of the grinding fight of price competition on products which, however excellent, yet are indifferently alike.

The author knows of a large contracting firm operating under a patent on an apparatus used in their work. Their bids on millions of dollars worth of work have been based on the saving in wear, and thus saving of cost of replacement, of the apparatus used. They have driven all their competitors from the field and at the same time have made very satisfactory profits. It is no small affair for, as stated, their contracts run into millions. Yet their patent is comparatively narrow but covers the only usable form yet devised. It has cost them but a few hundred dollars, yet it has lifted them out of an unceasing, profit-destroying struggle with competitors. This result was achieved by merely a little wide-awake thinking, some careful experimenting and the expenditure of a relatively small sum of money.

Another point for careful consideration is, if the product cannot be improved, can it be more cheaply produced? Can your process be changed, or new processes devised which will give your product at a cost materially less than that of your competitors? This done and its fruits secured to you by a patent and you are again, through the exercise of superior thought and application, placed at an advantage over direct competition and your patent secures you from molestation in these rights.

A large concern engaged in a certain line of paper manufactures through redesigning of machines and a little different handling of the material saved one-eighth inch in the width of the webs used in the machines. This effected an economy of $30,000 per year. This represents the interest on a half million dollars, and was no mean item to be transferred to the net earnings total.

As illustrating how vital the development of improvements and the taking out of patents may be, some facts regarding two large concerns in the same line will be given. About 1890 the first was prosperous and powerful, the second just well started. The first about the year mentioned, by reason of change in control, ceased working out improvements and taking out patents. They had excellent machines and a good market for them, competing with the best. The second company at the time mentioned was little known, but had some wide-awake inventors and began developing a line of patented improvements. Today the first concern is subsisting on shop work farmed out to it by other concerns and its name has almost entirely vanished from the trade. The second firm has advanced until their machines are recognized as of the best and they are one of the two largest sellers in the world.

Who Can Make Improvements?

With the idea of the possibility and desirability of improvements well in mind accompanied with the thought that through the operation of the patent system the results of efforts along this line may be made secure against use by others, let us pass briefly to the consideration of what are the qualities necessary for an inventor.

One of the prime requisites of a successful inventor is a thorough knowledge of the art in which he is working. The men working in the art are the ones who above all others possess this knowledge. This is said in view of the fact that some of the epoch making inventions were the work of outsiders. Morse was a portrait painter. Stephenson was, however, an engineer by nature and training. Bessemer was thoroughly experienced in metallurgy. Edison gradually evolved from telegrapher and student of science through his early electrical inventions into the broad field which he has since covered.

Most inventions do not introduce a new principle into the industrial world, nor frequently into the particular art, but are rather new and superior mechanical embodiments of well known and previously used principles. Using the field of machinery for purpose of il-

lustration, one of the leading printing press manufacturing concerns has recently put out a press having unprecedented speed for fast newspaper production. This was effected by a new and ingenious controlling mechanism for the folders. The speed of rotary presses had been limited by the folding capacity and so an increase in this capacity made a new record for speed in this art where speed is such an important factor. This controlling mechanism involved no new mechanical principle, but it did involve a new embodiment or form of mechanical movement which is of great value. In other words, most inventions are improvements. The history of industrial progress has been made largely by improvers, by men who have advanced along established lines. Skill in the art brings home to a man the imperfections in the art and furthermore he has in mind the limitations which must be remembered in devising commercial improvements. In other words, and from the other point of view, he knows what inventions if made will prove the most valuable and remunerative.

How to Stimulate Inventive Effort.

After the need is clearly seen the constructive imagination must provide the practical, tangible means for supplying the need. These means constitute the invention. Take therefore a man skilled in the art and of even fair mentality and training, if his mind is alive to the idea of improvement, there is strong probability that he can accomplish something in the way of improvement. The constructive imagination is more widely distributed than is generally supposed. Many concerns have grasped this situation very clearly and systems encouraging the inventive efforts of employes have been installed.

I have in mind, bearing on the foregoing, the case of a young man employed as an assembler upon a machine of fine and accurate construction and which performed a large number of operations. It necessarily had many parts and the cost of manufacture was accordingly a matter for serious consideration. He had at no previous time shown any inventive ability, but the company nevertheless entered into a contract with him on the subject taking over his inventions should he make any and offering in return a cash and stock bonus. His mind was directed toward the thought of improvement. One result was that he succeeded in replacing 33 parts on the machine by a single simple part and decreased, largely through the machine operations thereby rendered unnecessary, the cost of manufacture of the entire machine more than 4 per cent. Nothing more need be said perhaps concerning the wide diffusion and general existence of some practical degree of inventive ability and the good results accruing from cultivating it. It may not be true that in every shop there is undeveloped and unutilized inventive talent, but it is true that there is such talent in many concerns, and it is further true that it may be used for profit producing.

BOOK REVIEWS

Bridge Engineering; Roof Trusses. By Frank O. Dufour, C. E., Assistant Professor of Structural Engineering, University of Illinois Cnicago. The American School of Correspondence. 7 x 9¾ inches. 384 pages; illustrated. Half morocco. Supplied by THE IRON TRADE REVIEW for $5.

The perusal of this work leaves the reader somewhat disappointed. Not that it is not well written and well published. It is both. But the purpose of new books is to state new things, or at least to state old things in a new way. It has been said that in the realm of purely literary work, there is no *new thought* possible. During the history of the world, so many men and women have thought and transcribed their thought in writing that no new thought remains, and the only achievement possible to the modern writer is the expression of old thought in a new form.

So with the subject of bridge design. It is true that it is of modern development, but the theory of stresses has been investigated and studied and written about until at the present time, while there is still work to be done, and work of importance, it is, comparatively speaking, small in amount.

In the possibility of new methods of presentation of his subject matter, however, the modern writer of engineering text books finds his great opportunity; and if he can state the fundamental conceptions, principles, and facts of his subject in such a fashion as to make them more easily and, in particular, *more completely*, understandable by the student, his work is justified.

Prof. Dufour's book is well written, but it appears to offer neither very much that is new nor presented in a new way. In this connection, however, it should be remembered that it has been published not as a general reference book, but as a text book, and a text book for a special class of students at that; and in the light of the experience of the correspondence teachers, it may well be that the work demands just what this book is—a clear and correct statement of fundamental principles and methods, and that the topics treated are those which this past experience has shown to be most necessary.

One feature of the book calls for especial mention. A number of illustrations of existing structures, in general those out of the common order, have been given. These lend interest to the work and may well become a source of inspiration to the student.

The volume comprises Part 1, Bridge Engineering, 254 pages, and Part 2, Roof Trusses, 96 pages. Part 1 is subdivided into two sections, the first of which treats of Bridge Analysis, and the second of Bridge Design. In the section devoted to bridge design we find two old friends, the design of a deck plate girder and the design of a through pin-connected Pratt truss. These are indeed essential in any work on the subject, but two other things would be of value, and, as far as text book treatments are concerned, new—the complete designs of a through plate girder and a deck truss.

In Part 2, the illustration of traveling cranes, and of windows, doors, roofing connections, etc., may be noted as being of especial interest. Part 2 is also subdivided into two sections, the Analysis and Design of Roof Trusses, and Mill Building Construction.

Prof. Dufour is to be congratulated on having produced a good book, and it is only to be regretted that, owing perhaps to the limitations of its purpose, it presents few novel features.

The Design of Highway Bridges and the Calculation of Stresses in Bridge Trusses. By Milo S. Ketchum, C. E., Dean of the College of Engineering and Professor of Civil Engineering, University of Colorado. New York Engineering News Publishing Co. 6 x 9 inches. xxi+544 pages, illustrated. Cloth. Supplied by THE IRON TRADE REVIEW for $4.

In this volume of 544 pages the author has treated his subject with characteristic thoroughness. We have had so many books on bridges, and in fact on almost all engineering topics, that the present need is for works that supply the information lacking in the older treatises. It has often occurred to the writer that valuable

books could be written by engineering graduates, after considerable experience in practical work, by stating simply the problems they had met and the facts they had learned concerning which no information could be found in text books. Further, a most important contribution to engineering literature could be made by an engineer of education and long experience in, say, bridge design and construction, by taking any one of the standard works on that subject and writing a companion book to furnish the information which the other book did not contain. We have many valuable engineering works on many engineering subjects, but we have no complete reference work on any one of them.

While Prof. Ketchum's thought may not have moved along these exact lines, he is nevertheless one of the pioneers in this field. In the work under review Chapter XIX may perhaps be mentioned as being of most particular value. This chapter contains very full information on costs from shop drawings to erection. Chapter XXII, on the calculation of the efficiencies of the members of a highway bridge, is also a valuable piece of work.

The book comprises three parts: 1. Stresses in Steel Bridges; 2. The Design of Highway Bridges; 3. A Problem in Highway Bridge Details. Part 1 treats of types, loads, and weights, and the general calculation of stresses. Part 2 includes, in addition to a general treatment of steel bridge design, a discussion of the design of abutments and piers, the stresses in solid masonry arches, and the design of masonry bridges and culverts. Part 3 contains Chapter XXI on the calculation of weight and cost of a 160 foot span supposed to be in actual existence, and Chapter XXII alluded to above. Appendix 1 gives the author's general specifications for steel highway bridges. Throughout the whole book may be found much information on materials and devices used in practice.

It is a distinct contribution to our professional literature and should find a place in the library of every engineer.

Suit has been brought at Springfield, O., looking to an inquiry into the affairs of the Thomas Mfg. Co., by relatives of the president, W. S. Thomas. The solvency of the company is not questioned. It manufactures agricultural implements.

BLAST-PRESSURE AT THE TUYERES AND INSIDE THE FURNACE.[1]

By R. H. Sweetser.

At the suggestion of J. H. Frantz, the general manager of the Columbus Iron & Steel Co., a test was made at the East furnace of the company to determine whether there was any difference in blast-pressure at the different tuyeres. The apparatus used for this test was not sensitive enough to give accurate results. It consisted of a small pressure gage mounted on a ⅜-inch gas pipe. A hollow plug, fitting into the peep-hole of the tuyere-cap, prevented the blast from blowing out during the test. The test-pipe was held in place by means of the handle on the outer end.

For the first series of tests the pipe was just long enough to extend through the blow-pipe to the nose of the tuyere. No checks or calculations were made to determine the effect on the gage readings of pressure produced by variations in the velocity of the blast.

To determine the pressure, one man lifted the tuyere-cap, and another pushed the pipe through the peep-hole till the hollow plug was tight in place, when a third took the reading on the gage. It took but a few minutes to go all round the furnace. The first observations, made Jan. 24, 1908, were taken 30 minutes after a very heavy slip in the furnace; and during the 19 minutes required for the eight readings the blast pressure in the bustle-pipe dropped 1 pound. The highest pressures were registered at tuyeres 2 and 3. All the tuyeres were 5.5 inches diameter, except No. 8, which was only 4.5 inches. There were obstructions in tuyeres 2 and 3, through which, consequently, there passed a smaller quantity of blast than through the others. The errors in these three readings, due to the velocity of the blast, would therefore be smaller. It is possible that all the pressures in the first test would be the same, if the proper corrections had been made; but, since no such corrections were made then or can be made now, it is not safe to draw conclusions as to the relative pressure at all tuyeres. Although the end of the pipe became hot, it was not injured; and the same pipe served to test all eight tuyeres.

After the first experiment, it was decided to test the blast-pressure beyond the nose of the tuyere, and for this purpose longer ⅜-inch pipes were provided, the first of which extended 7.75 inches, and the others respectively 1 foot 7.75 inches, 2 feet 6.5 inches, 3 feet 7.75 inches, and 5 feet beyond the nose of the tuyeres.

On Jan. 28, 1908 (the furnace being hot and working well, excepting that tuyere 3 was plugged with iron and cinder, in consequence of a very heavy slip four days before), two tests were made with the end of pipe projecting 7.75 inches and 1 foot 7.75 inches respectively beyond the nose of the tuyeres. There seemed to be little difference between at the nose of the tuyeres and the pressure a short distance inside the furnace. There was an apparent drop of 2 pounds in pressure between the bustle-pipe and the nose of the tuyere. The output of the furnace on that day was normal (250.4 tons).

On Jan. 29, the pressure at the nose and at 2 feet 6.5 inches beyond the nose was taken for all the eight tuyeres. In front of No. 2 the stock was a little "raw," and slag could be seen dropping down. When the pipe was pushed in beyond the nose of the tuyere the end became plugged with slag, and immediately the gage showed 12 pounds pressure, due to the expansion of the air in the closed pipe. As soon as the cinder had been cleaned out of the pipe the experiments were continued.

On Feb. 3, another test was made, with the end of the pipe projecting 3 feet 7.75 inches beyond the nose of the tuyeres. The furnace was very hot and working well. The reading of the blast-gage was taken as quickly as possible, but 3 feet of the pipe burned off before it could be withdrawn. It was almost time for the first cast of iron, and this circumstance, together with the high blast-temperature (860 degrees Fahr.), probably caused the burning off of the pipe. At 1:47 p. m, just after the first flush, another set of tests was made. The blast temperature was 830 degrees Fahr., and the pipe went into the furnace very easily and was quickly withdrawn. Three readings were taken before the end of the pipe had been melted off, and in each case the apparent pressure was higher inside the furnace than at the nose of the tuyeres.

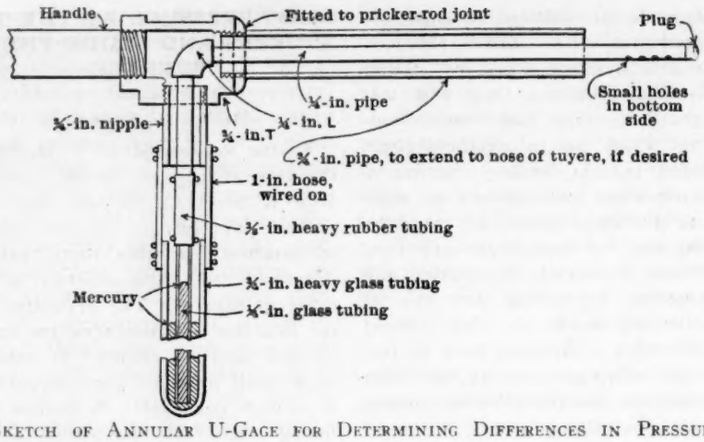
The last test was made on Feb. 4, 20 minutes after a cast. The pipe reached 5 feet beyond the nose of tuyere 5. The furnace was very hot and working smoothly. The pipe was pushed into the blow-pipe until the

[1] A paper presented at the New Haven meeting, (Feb., 1909) of the American Institute of Mining Engineers.

end reached the nose of the tuyere, when the pressure was read from the gage, and the pipe was quickly pushed into the furnace almost to the center of the hearth. There was just time to catch the reading of the blast pressure before 5 feet 1 inch of the pipe had melted off from the end. The two readings showed a drop of only 0.3 pound between the nose of the tuyere and near the center of the furnace. On this day the furnace made 292.7 tons. Further experimenting had to be postponed on account of the blowing-out of the furnace on Feb. 5.

The East furnace, where these tests were made, is 75 feet high by 18 feet bosh-diameter and 12 feet hearth diameter, and has one 4.5 by 12-inch and seven 5.5 by 12-inch tuyeres. The product (of "basic" and "malleable" iron) averaged about 250 tons per day. The lining was old (the inwall dating from April, 1903, the bosh having been once re-lined since that date) and was worn out in places. After blowing out, it was found that the bustle-pipe was in some places almost wholly choked with flue dust.

The details of the tests described above are given in Table I:



SKETCH OF ANNULAR U-GAGE FOR DETERMINING DIFFERENCES IN PRESSURE.

When either of the two furnaces of the company is blown in again, it is intended to make further experiments along this line. The furnace lining will then be new and free from obstructions, and all stoves and blast connections will be clean and of known diameter. Possibly by that time some better device for getting the true pressure will be developed and used.

Under the conditions of the above tests, the results obtained are not regarded as possessing much value in themselves but they point the way to further investigations which may afford us important guidance in the determination of proper diameters for tuyeres, blow-pipes and blast connections. I hope this fragment of imperfect research will bring out reports of other experiments, and also stimulate similar inquiries under other conditions.

TABLE I.—EXPERIMENTS ON BLAST-PRESSURE INSIDE THE BLAST-FURNACE.

Date, 1908. Output.	Time.	Total Length of Pipe.	Position of Inside End.	Tuyere.	Pressure at Nose of Tuyere.	Pressure in Furnace.	Pressure in Bustle-pipe.	Pressure at Engines.	Temp. of Blast.	Remarks.
					Lb.	Lb.	Lb.	Lb.	°F.	
	11.27 a.m.			1	8.8	...	10.0	....		Flushing cinder during first two readings. Furnace had made a heavy slip at 10.45 a. m. Pressure dropped from 15 lb. at 10.46 to 9 lb. at 11.20 a. m. because the steam dropped 35 lb. in as many minutes.
	11.29			2	9.1	...	10.0	....		
Jan. 24.	11.31			3	9.1	...	10.0	....		
213.7	11.15			4	8.5	...	11.0	....		
tons	11.17	6 ft. 9 in.	At nose.	5	8.6	...	.....	....		
pig	11.20			6	8.9	...	.....	....		
	11.22			7	8.5	...	.....	....		
	11.24			8	9.0	...	10.1	....		
	11.34			4	8.2	...	10.0	....		
	3.20 p.m.			1	9.5	8.0	10.75	11.1		
	3.25			2	9.5	8.0	10.75	11.1		
	3.29		7.75 in.	4	8.0	8.0	10.75	11.1		
	3.30	7 ft. 4.75 in.	inside.	5	8.1	8.0	10.75	11.0	730	The little gauge used at tuyere records 0.3 lb. less than bustle-pipe gauge.
	3.31			6	8.0	7.9	10.75	11.0		
	3.32			7	7.8	8.0	10.75	11.0		
	3.33			8	8.8	8.0	10.6	11.0		
Jan. 28.	4.12			1	8.2	8.2	10.3	10.7		Clear tuyere, crooked blow-pipe.
250.4 tons pig.	4.14	8 ft. 4.75 in.	1 ft. 7.75 in.	2	8.0	8.2	10.2	10.7		Tuyere half-filled, crooked blow-pipe.
	4.16			4	8.1	8.1	10.2	10.6		Clear tuyere, straight pipe.
	4.17			5	8.2	8.2	10.2	10.6	690	Clear tuyere, straight pipe.
	4.18			6	8.6	8.1	10.2	10.6		Clear tuyere, straight pipe.
	4.19			7	8.1	8.2	10.2	10.6		Clear tuyere, crooked pipe.
	4.20			8	8.1	8.0	10.2	10.6		Clear tuyere, 4.5 in.
	4.25			2	8.7	8.4	10.7	11.0		
	3.07			1	7.8	7.8	10.0	10.6		*End of pipe plugged with cinder.
	3.09			2	7.5	12.0*	10.0	10.6		
Jan. 29.	3.20			3	8.0	7.6	10.0	10.6		Tuyere partly plugged.
250.9	3.13			4	7.2	7.6	10.0	10.6		
tons	3.15	9 ft. 3.5 in.	2 ft. 6.5 in.	5	7.9	7.5	10.0	10.7	740	
pig.	3.16			6	7.5	7.5	10.0	10.7		
	3.17			7	7.5	7.5	10.0	10.7		
	3.18			8	8.2	7.7	10.0	10.7		4.5. tuyere.
	3.21			2	8.0	8.0	10.0	10.7		
Feb. 3.	9.06 a.m.	10 ft. 4.75 in.	3 ft. 7.75 in.	4	6.4	6.5	10.1	11.1*	860	*Furnace very hot and working well, pipe burned off 3 ft.t back.
244.2	1.47 p.m.									
tons	1.51			5	7.5	8.0	10.5	11.8		Just through flushing, pipe went in easy.
pig.	1.52			6	7.5	7.6	10.5	11.7	830	
				7	7.7	7.8	10.5	11.7		
Feb. 4. 292.7 tons pig.	11.44	11 ft. 9 in.	5 ft. 0 in.	5	7.5	7.2	10.3	11.9	860	20 min. after cast, 5 ft. 1 in. of pipe burned off almost immediately.

Discussion.

The foregoing paper was submitted in manuscript to a member of the Institute, qualified by long practice and professional authority to give advice on this subject, but unable at this time to engage in a formal discussion of it, and therefore unwilling to offer a personal contribution to such a discussion. With his permission, I publish the following summary of his remarks:

"I do not know of any other investigations along these lines except some very thorough ones made by Fliegner on 'The Flow of Air Through Orifices,' which have always been considered authoritative, and which take account of both the absolute pressure and the absolute temperature. J. E. Johnston Jr., in his 'Notes on Physical Action of the Blast Furnace,' gives an approximation formula for the drop of pressure in passing through the tuyeres. For the pressure drop through the tuyeres alone, I would trust this formula in preference to your experimental results, because the conditions of your experiment, as you frankly state them, were so exceedingly bad in comparison with what they could be made, and were made by Fliegner.

"I think it is a mistake to take only the pressure in the bustle-pipe. What I should want to know in such a case would be the difference in pressure between the blow-pipe and the inside of the furnace, which can easily

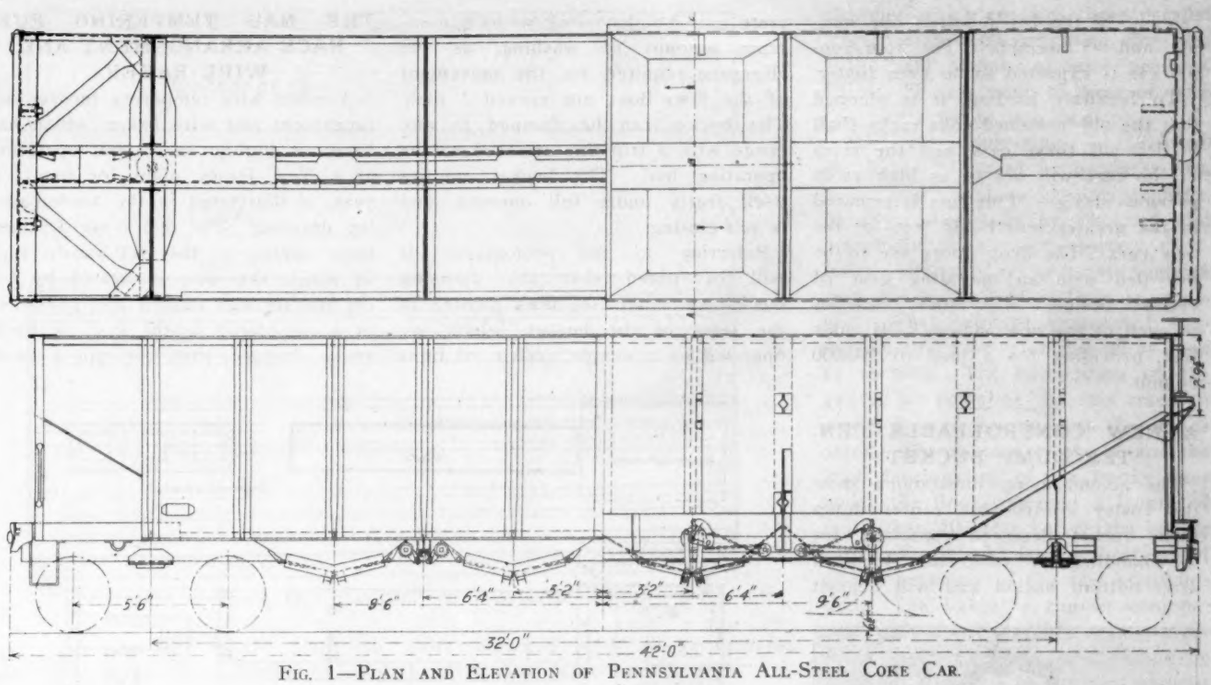


FIG. 1—PLAN AND ELEVATION OF PENNSYLVANIA ALL-STEEL COKE CAR.

filled with mercury and arranged about as shown on the accompanying rough sketch, Fig. 1, the outer tube being filled with water above the mercury to above the top of the hose before screwing the nipple into the T. This would give direct readings of differences of pressure, which are very much more desirable than those of small differences in large pressures, taken from gages which may or may not be accurate. The nicest form of U-gage for this job is the annular one, in which one pressure takes effect in the central tube and the other in the annular space. This makes the difference extremely easy to measure and compensates for any error in holding the gage plumb, etc.

"Another thing which occurs to me is, that, as a result of the high velocity of the entering blast, the suction effect on the open end of the tube will give an appreciable error, to avoid which, the test tube should be plugged on the end and its side drilled full of small holes with rounded edges.

"If you make any more tests of this kind, these two changes, in my opinion, would render your work much easier and your results more accurate.

"I suppose everybody will be at first inclined to reject, as due to errors of observation, the indication given by the experiments you report, that the pressure inside the furnace is higher than at the tuyeres. But this is not necessarily true. The high velocity of the air jet may be transformed back into pressure inside the furnace; in fact, that is what its velocity is for. This point also can be determined with the differential gage by using two concentric pipes, the outer one of which reaches to the nose of the tuyeres, and the other to any desired distance beyond that in the furnace.

"I have taken in the past a great deal of interest in this subject; and I shall be glad to see your paper published, for the discussion that it ought to bring out. This would be all the more valuable if it should induce you, or some one else, to make more extended and accurate tests, in which the friction in the bustle-pipe and stocks are eliminated. The ordinary formula for the flow of air enables us to design bustle-pipes so that there need be no appreciable loss of pressure when they are clean; and in a case of this kind, such an unnecessary loss only tends to becloud the value and diminish the interest of the investigation."

A NEW ALL-STEEL COKE CAR.

In an effort to provide shippers of coke with an improved car, which can be loaded and unloaded in the shortest possible time, the Pennsylvania lines west of Pittsburg have specified that of the recent order for 2,200 new cars, 1,000 should be all-steel cars of new design and of greater capacity than any coke cars hitherto built for regular service.

The main novelty in these cars will consist of four hoppers, with eight openings in the bottom of the car, making the car practically self-clearing. With the doors all open, there will be an open area of 84 square feet. This will greatly facilitate unloading. It has been found that three somewhat smaller cars could be unloaded by three men in 15 minutes from the time they were placed on the trestle until the engine moved them away. From the time the drop doors were opened until the coke

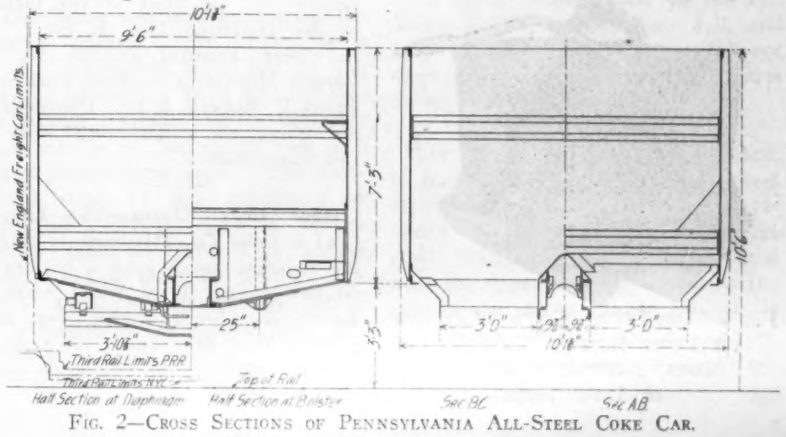


FIG. 2—CROSS SECTIONS OF PENNSYLVANIA ALL-STEEL COKE CAR.

ran out of the car required one minute and 45 seconds. The four-hopper car is expected to do even better.

To facilitate loading, it is planned that the old-fashioned coke racks shall be left off these cars, and the sides of the cars will not be as high as in previous designs. This loss is repaired in the greater length—42 feet—of the new cars. The drop doors are to be provided with an operating gear of special design. The total capacity of each of the new cars is 2,794 cubic feet, providing for a load of 100,000 pounds.

A NEW CONTROLLABLE CENTER DUMP BUCKET.

The accompanying illustrations show the Insley controllable center dump form bucket designed especially for the handling of concrete. It is a drop bottom bucket and will deposit

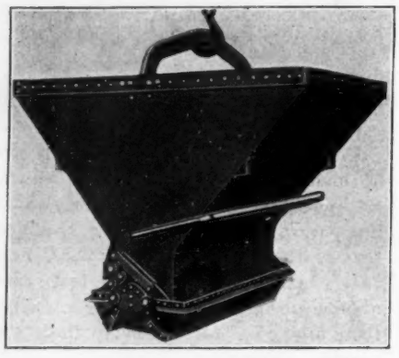


FIG. 1—THE INSLEY CONTROLLABLE CENTER DUMP BUCKET.

the concrete in a straight line from the center of the bucket. At the same time it is entirely under control. By the use of one form of bucket the concrete can be placed in narrow forms in a regulated stream and without side splashing. Owing to its construction it can be placed practically in contact with the forms, and when used under water, the concrete can be deposited with a minimum amount of washing, as the clearance required for the movement of the jaws does not exceed 1 inch. The bucket can be dumped at any range with a trip line attached to the operating bail. The bucket empties itself freely under full opening, and is self-closing.

FIG. 2—THE INSLEY CONTROLLABLE CENTER DUMP BUCKET, WITH JAWS OPEN, SHOWING OPERATION OF LINK WORK.

Referring to the photographs, it will be noted that the dumping mechanism comprises jaws pivoted to the sides of the bucket, which are operated by a simple system of links and levers controlled by an operating handle, which extends across the width of the bucket. By means of this handle a trip rope may be used to open the bucket, or it may be opened by hand from either side, as desired. When used for work under water, it is provided with hinged lids. The bucket is made in six sizes with a nominal capacity ranging from ½ to 2½ cubic yards, respectively. It is manufactured by the Insley Mfg. Co., Indianapolis.

Will Use Gayley Process.—The contract for the refrigerating equipment to be installed in connection with the Gayley dry air blast at the furnace of the Hamilton Iron & Steel Co., has been awarded to the De La Vergne Machine Co., New York city. Frank C. Roberts & Co., Philadelphia, are doing the engineering work in this connection.

New Coke Ovens.—The Jamison Coal & Coke Co., Pittsburg, is putting the finishing touches on a battery of 60 new ovens at its No. 1 plant at Luxor, Pa. Some of the ovens have already been fired and it is expected that the entire plant will be in operation by March 15.

THE NAU TEMPERING FURNACE ARRANGEMENT AND WIRE BAKER.[1]

A novel wire tempering furnace arrangement and wire baker, which has been in highly successful operation at a New Jersey plant for nearly a year, is illustrated in the accompanying drawing. The tempering arrangement applies to the well-known type in which the wire is heated by being run through molten lead contained in a pot placed in the first, or hardening, furnace, then through a hardening oil bath and finally again through molten lead contained in a pot on top of the tempering furnace.

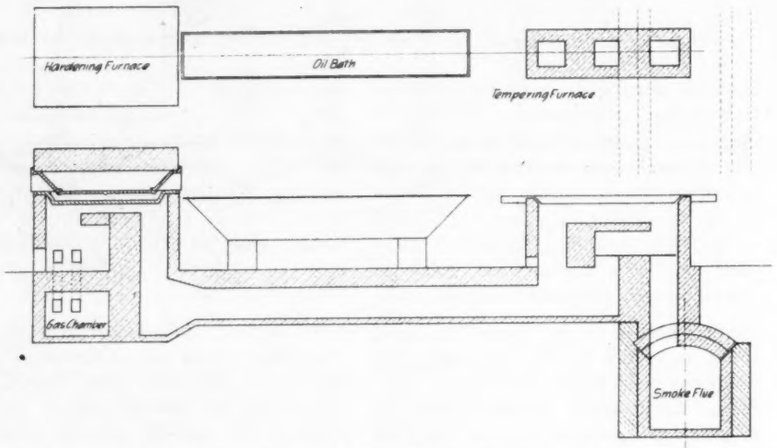


FIG. 1—PLAN AND ELEVATION OF NAU WIRE TEMPERING AND ANNEALING FURNACE.

Both hardening and tempering furnaces being of such small dimensions that the gas can hardly burn completely before it leaves the furnace, and the temperature of the flame being necessarily limited in the hardening furnace by the danger of melting in short order the cast iron pot when the heat runs up too high and in the tempering furnace by the low degree of heat to which the hardened wire may be re-heated to temper it, it was decided to run the two furnaces in connection with each other.

Producer gas is admitted to the hardening furnace, where it burns only partly and sufficiently to heat the wire running through the lead bath to the desired temperature. The mixture of unburnt gas and products of combustion, constituting a gas of low heating capacity, are run from the hardening to the tempering furnace, where it is lighted again under the tempering lead pot and burns with but little heat development before it is allowed to enter the smoke stack

[1]By J. B. Nau, 1 Broadway, New York City. Both of the devices described are patented by Mr. Nau.

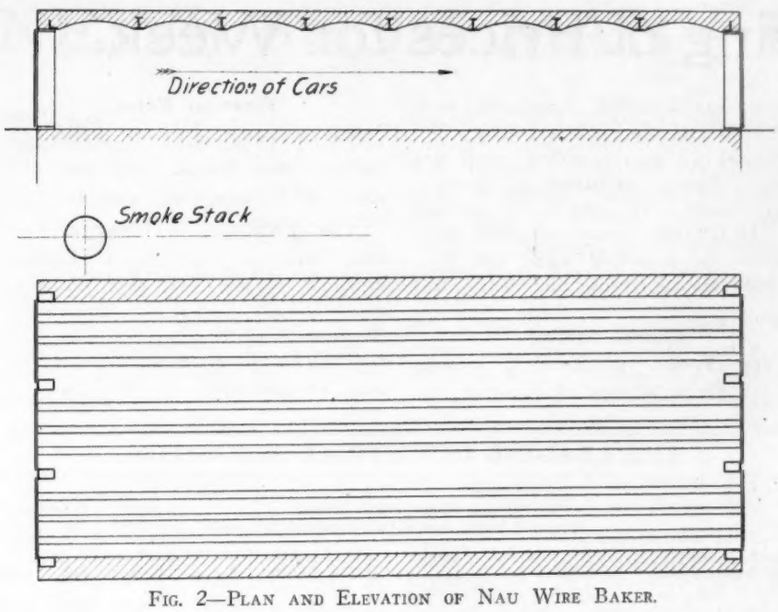


FIG. 2—PLAN AND ELEVATION OF NAU WIRE BAKER.

flue. All the sets in the plant, to the number of 14, are run on the same smoke flue.

The operation of the furnace is so simple, that with a little practice the temperature in both furnaces can be kept uniform and at the desired point. It is evident that with good care both hardening and tempering furnace can be run by regulating and paying more particular attention to the hardening furnace. If the temperature in this latter runs too high the gas burns too completely here, less unburnt gas will be left in the mixture carried to the tempering furnace and the latter has a tendency to run too cold. In this case it is almost invariably sufficient to limit the air supply to the first furnace, without touching the gas. The immediate result will be that less gas will burn here, with a lowering of temperature in the hardening furnace, and more unburnt gas will reach the second furnace where the temperature naturally will be raised.

If, on the contrary, the first furnace becomes too cold with the same amount of gas used, the second one generally runs too hot. A little more generous admission of air to the first furnace will at once remedy this evil. Thus it can be seen that the two furnaces balance each other and that once the man in charge has obtained sufficient experience, the two furnaces can each be kept practically at the desired temperature. Of course for the regulation of the amount of gas admitted to the first furnace, a gas valve is provided; the tempering furnace needs no gas valve. The results obtained with these furnaces have proved most satisfactory.

Were gas admitted separately to both hardening and tempering furnaces, owing to their smallness and the peculiar heat conditions required, much gas would be wasted. With the arrangement here described, the gas is consumed in such an economical way, that hardly any smoke is seen escaping from the smoke stack serving all the furnaces.

In other respects, also, the system has proved an improvement over the old coke fired furnaces. The wire treated varies between No. 5 rod and No. 19 wire, all used for springs. With the present arrangement considerably more wire can be run through one pot during the same time than in the original coke heated furnaces, while the life of the lead pots in the hardening furnace is largely increased, naturally coke handling in connection with the furnace is done away with. With good draft no smell of gas is detected in the place.

The Wire Baker.

This latter was also built from the original designs of the writer. It is of the continuous style and as the drawing shows, is built of one single baking chamber of an approximate size of 41 feet x 15 feet x 6 feet, 6 inches clear inside. The heating is done by gas circulating in flues laid under the floor in such a manner that the furnace is heated uniformly and that the heat of the gas is used most completely before the products of combustion enter the smoke stack. No gas or products of combustion ever enter the baking chamber which contains three parallel tracks, each accommodating five cars with 2,000 pounds of wire per car. In all, 15 cars with 15 tons of wire can be treated at one time.

Like the tempering arrangement, the baker is heated by producer gas. A temperature up to 500 degrees Fahr. or over can easily be obtained and maintained with nearly perfect regularity, although in ordinary practice only 300 to 320 degrees Fahr. is necessary. The moisture evaporated during the operation is carried off as soon as formed. The combustion of the gas is so complete that no trace of smoke is seen issuing from the smoke stack. The absence of smoke and the long development of the smoke flues under the floor, reaching a length of more than 100 feet before the smoke enters the stack, is the best proof of the economy of the fuel consumption. The baker is run in conjunction with the tempering arrangement above mentioned, so that it would be impossible to give the correct amount of gas burnt; but for several weeks the baker was run with 10 tempering furnaces and an old round baker of the intermittent type heated with gas, but now torn out. It was noticed that the amount of gas admitted to the continuous baker was less than the amount of gas admitted to one hardening furnace. Taking this as a guide and comparing with the coke burnt on the previous round bakers, the amount of fuel used in the continuous baker is less than what was used formerly.

The economy in labor is correspondingly great. In the continuous baker the wire, once loaded on the car, is run at the cold end of the furnace, and is not handled again until removed at the other end, when baked. In the old baker the wire had to be brought up on a car to the baker, there unloaded by hand and placed in the baker, from whence, when finished, it was removed by hand to be loaded again on the car. There are, therefore, two full and very disagreeable handlings that are dispensed with in the continuous baker.

The Avery Stamping Co., Cleveland, is placing on the market a pressed steel molders' ladle of 40-pounds capacity. It is made of 16-Stub's gage steel. The ladle is beaded all around near the upper edge to hold it in the ring of the carrier shank. This ladle is a recent addition to the line of 50, 100 and 150-pound ladles manufactured by the above company.

Narrow Swing of Prices for Week.

Another week of dullness has characterized the market. The average closing price of 16 leading stocks Saturday was 121, or 4 below the highest and 30 above the lowest of 1908.

While Monday was one of the quietest days of the year, yet prices averaged slightly higher at the close. A federal court decision in Missouri declared the 2-cent fare and maximum freight laws of that state void. The government estimate on wheat, which was an increase of 20,000,000 bushels over private estimates, brought about a break of 3¼ cents. On Tuesday, gold to the amount of $1,400,000, was engaged in New York for direct shipment to London, this being in addition to $2,500,000 for export to South America. Weakness in industrial stocks depressed the market and prices closed lower. Further weakness developed Wednesday, but the close was firm with some recovery. The government suit against the Standard Oil Co. was dismissed at Chicago. Sales on Thursday made the smallest total for any day of the year. All grades of copper were reduced ⅛ cent a pound, and tin plate was reduced 25 cents a box. There was a slight increase in trading Friday, and prices averaged higher. All grades of copper were again reduced. Within a narrow range of prices, the market on Saturday remained dull, Air Brake leading the decline with a loss of 4 points a share.

Call money ranged 1½ to 2 per cent during he week, and time money was very quiet. There was a reduction of 1,731 in the total of idle railway cars in the two weeks ending March 3. A decline in the volume of bank clearings in the United States of 16 per cent from last week to a total that was below the average of nearly every week for five months past was noted; there was still an increase of 22 per cent over the corresponding week last year.

The actual figures of clearing house banks showed surplus increased $1,004,400; loans decreased $3,227,000; deposits decreased $4,204,800, and the ratio of reserve 26 per cent, an increase of 0.1 per cent. Non-member banks and trust companies showed loans increased $571,200; deposits decreased $3,949,500, and the percentage of reserve 17.8. The number of shares dealt in during the week was 2,026,936, compared with 3,066,600 the preceding week, and 4,018,750 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $15,876,000, compared with $10,794,000 the preceding week, and $11,813,000 the corresponding week last year.

Copper Stocks.

New York.—Amalgamated Copper closed 68, a net loss of ¼.

Financial Notes.

The Westinghouse Air Brake Co. declared the regular quarterly dividend of 2½ per cent, payable April 10; the Pittsburg, Bessemer & Lake Erie Railroad Co., the semi-annual dividend of 1½ per cent on common, payable April 1; The Sloss-Sheffield Steel & Iron Co., the regular quarterly dividend of 1¾ per cent on preferred, payable April 1;

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. Mar. 13	Changes in Week	Date 1909 Ann. M't'g.	Stock Outstanding	Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	13	— ⅞	Sept. 2	$19,820,000		.....	.....
Allis-Chalmers pr.	42¼	— ⅞		16,150,000	7 cum	1¾ Q.	Feb., 1904
American Can	8	— ⅛	Feb. 2	41,233,300		.....	.....
Am. Can pr.	75½	+ ⅝		41,233,300	7 cum	1¼ Q.	Jan., 1909
Am. Car & Foundry	48¼	— ¾	June 24	30,000,000		½ Q.	Jan., 1909
Am. Car & Fdy pr.	110½	.....		30,000,000	7 n. c.	1¾ Q.	Jan., 1909
American Loc.	50¾	— ⅞	Oct. 19	25,000,000	5	1¼ Q.	Aug., 1908
American Loc. pr.	111½	— ¼		25,000,000	7 cum	1¾ Q.	Jan., 1909
American Ship	58⅞	.....	Oct. 13	7,600,000	4	1 Q.	June, 1908
American Ship pr.	104	.....		7,900,000	7 n. c.	1¾ Q.	Oct., 1908
Am. Steel Foundries(new).	35¾	— ⅝	Dec. 2	17,184,000		.....	.....
Am. Steel Foundries, pr.	47½	.....		17,240,000	6 cum	1	Aug., 1904
Barney & Smith	40	.....	June 1	2,000,000	4	1 Q.	Sept., 1907
Barney & Smith, pr.	95	.....		2,500,000	8 cum	2 Q.	June, 1908
Bethlehem Steel	21	—1	April 6	14,862,000		.....	.....
Bethlehem Steel, pr.	49	.....		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	35	.....	March 16	45,000,000*	6	1½ S. A.	Feb., 1909
Cambria Iron	47	+ ¾		8,468,000*	4	2 S. A.	Sept., 1908
Chicago Pneumatic Tool.	22	.....	Feb. 15	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	32	— ½	Oct. 18	34,235 500		3½	April, 1902
Crucible Steel	6½	— ¾	Oct. 20	24,578,400		.....	.....
Crucible Steel, pr.	53⅜	—3⅜		24,436,500	7 cum	1 Q.	Dec., 1907
Empire Steel	6	.....	April 27	1,254,770		.....	.....
Empire Steel, pr.	47	.....		2,500,000	6 cum	1½ S. A.	Jan., 1909
Fay & Egan	90	.....	Feb. 18	1,000,000	6	1¾ Q.	Nov., 1908
Fay & Egan, pr.	125	.....		1,000,000	7 cum	1¾ Q.	Nov., 1908
General Electric	152¾	+ ¾	May 11	65,178,800	8	2 Q.	Jan., 1909
Harbison-Walker	16¾	.....	Jan. 18	18,000,000		½	Oct., 1907
Harbison-Walker, pr.	80	—1		9,600,000	6 cum	1½ Q.	Jan., 1909
International Pump	37⅛	+1⅛	June 8	17,762,500		1	April, 1905
International Pump, pr.	84¾	+ ¾		11,350,000	6 cum	1½ Q.	Feb., 1909
Lackawanna Steel	30	.....	March 10	34,971,400		.....	.....
Lake Sup. Corp.	18⅞	— ⅛	Oct. 6	40,000,000		.....	.....
New York Air Brake	83½	.....	June 17	8,012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	100	.....	Feb. 3	8,500,000	6	1½ Q.	Mar., 1909
Niles-Bement-Pond, pr.	100	.....		2,000,000	6 cum	1½ Q.	Feb., 1909
Otis Elevator Co.	49	+1	March 15	6,375,300		1½ S. A.	April, 1908
Otis Elevator Co., pr.	95	+1		6,295,000	6 n. c.	1½ Q.	Jan., 1909
Penn. Steel	50	.....	May 10	10,750,000		.....	.....
Penn. Steel, pr.	104	+3		16,500,000	7 n. c.	3½ S. A.	Nov., 1908
Pittsburg Coal Co.	10¼	.....	March 9	28,104,600		.....	Nov., 1906
Pittsburg Coal Co., pr.	41⅞	.....		27,071,800	7 c.	1¾	April, 1905
Pressed Steel Car	35⅜	—1⅛	Feb. 17	12,500,000		3	Aug., 1904
Pressed Steel Car, pr.	97¼	— ¾		12,500,000	7 n. c.	1¾ Q.	Feb., 1909
Pullman	170	.....	Nov. 10	100,000,000	8	2 Q.	Feb., 1909
Railway Stl. Spring	35⅜	— ⅝	March 4	13,500,000	4	1 S. A.	Oct., 1908
Railway Stl. Spring, pr.	101¼	+1¼		13,500,000	7 cum	1¾ Q.	Dec., 1908
Rep. Iron & Steel	20	+ ½	Oct. 20	27,191,000		.....	.....
Rep. Iron & Steel, pr.	71	—1		20,416,900	7 cum	1¾ Q.	April, 1908
Sloss-Sheffield	71¾	— ¾	March 10	10,000,000	5	1¼ Q.	Mar., 1909
Sloss-Sheffield, pr.	108	.....		6,700,000	7 n. c.	1¾ Q.	Jan., 1909
U. S. Pipe & Fdy.	26½	.....	June 23	12,500,000	4	¼ Q.	Dec., 1907
U. S. Pipe & Fdy., pr.	70	.....		12,500,000	7 n. c.	1¾ Q.	Sept., 1908
U. S. Steel	44⅜	— ⅝	April 19	508,302,500	2 n. c.	½ Q.	Mar., 1909
U. S. Steel, pr.	110⅜	— ⅞		360,281,100	7 cum	1¾ Q.	Mar., 1909
U. S. Steel 5s.	103	+ ⅛		463,798,000	5	5 A.	.....
Va. Iron, Coal & Coke	57	.....	Sept. 21	9,073,680		.....	.....
Westinghouse Elec.	77½	— ½	June 16	27,173,200	10	2½ Q.	Oct., 1907
Westinghouse Air Brake	104	—7	Oct. 5	14,000,000*		2½ Q.	Jan., 1909

Par value of shares, $100, except those starred (*), $50.

Boston.—Butte Coalition closed 23, no change; Calumet & Arizona closed 100, a net loss of 3; Calumet & Hecla closed 630, a net loss of 5; North Butte Mining closed 68¾, a net loss of ½; Quincy Mining closed 87⅞, a net loss of ⅛.

the American Iron & Steel Mfg. Co., the regular quarterly dividend of 1¼ on common and preferred, payable April 1; The Dominion Coal Co., Ltd., Montreal, the regular quarterly dividend of 1 per cent on common ...yable April 1.

NEWS FROM MANY INDUSTRIES

New Buyers:—

The Modern Foundry & Machine Co., Paris, Ill., with $100,000 capital stock has been incorporated by Ross M. Mason, Burt R. Simmons and Peter A. Bowsher.

The Cincinnati Gear Cutting Machine Co., Cincinnati, O., has been incorporated by V. W. Anderson, N. B. Chase, A. R. Murray, W. J. Foster and L. W. Anderson, with $10,000 capital stock.

James J. Clark, Thomas J. Belding, C. E. Saint, and Elmer R. Ecker, with a capital of $200,000 have been granted articles of incorporation as the Massillon Rolling Mill Co., Massillon, O.

The Bridge & Structural Co., of St. Louis, has filed application for a charter to erect bridges, etc., with a capital of $10,000. The incorporators include: J. A. Clacker and Edward W. Flohr.

A charter has been granted to the Arthur Wagner Co., 112 Clark street, Chicago, machinery brokerage business, with $2,500 capital stock. Arthur Wagner, Cecil Ashton and Herman Wagner are the incorporators.

Articles of incorporation have been filed by the Standard Earth Auger Co., 702 Oxford building, Chicago, to manufacture tools and implements, with $50,000 capital. The incorporators are Frank H. Chase, Vail R. Bucklin and Edward I. Bucklin.

With $8,000 capital stock, the Fischer Foundry Co., has been granted a certificate of incorporation. Those interested are: George S. Fischer, Frederick F. Fischer, Albert Fischer and George L. Fischer Jr., all of Pittsburg.

A certificate of incorporation has been granted to the Pneumatic Vise Co., 184 LaSalle street, Chicago, to manufacture machinery and supplies, with $50,000 capital stock. The incorporators are Thomas Moore, M. Riley and Emory D. Frazer.

The Stetson-Ross Machine Works, Seattle, Wash., has been incorporated with a capital stock of $100,000 by H. B. Ross and F. M. Stetson. This firm has been in existence for some time, making a specialty of saw mill machinery.

The Roof Engine Co., Muncie, Ind., has made application for a charter to manufacture engines and engine furnishings, with a capital of $30,000. The incorporators of the company are: Robert M. Roof, James M. Quick and Frank E. Hill, Muncie, Ind.

The Excel Mfg. Co., Boston, manufacturer and dealer in all kinds of machinery, with $25,000 capital stock, has been incorporated through: President, Jerome J. Pratt, 209 Washington street; treasurer, Wilhelm E. Lundguist, No. 9 Everett Road; clerk, Frank J. Flannigan, No. 9 Burlington avenue, all of Boston.

Glokner & Blue Co., The Bronx, New York City, to manufacture hardware, machinery and tools, with $20,000, has been chartered by Edward Glokner, 50 East 124th street; Edward O. Glokner, 468 West 157th street, both of New York City, and E. Lanning Blue, Jersey City, N. J.

The Rutan Valve & Machinery Co., Elmira, N. Y., has applied for a charter to manufacture Rutan triple duplex valves, with $5,000 capital. Those interested in the company are: Archie N. Rutan, John W. Hawthorne, G. Albert Gucker and Herbert A. Dunn, Elmira, N. Y.

A charter has been granted to the Robertson Drill & Tool Co., Buffalo, to manufacture machinery, tools and specialties, and to operate a machine shop. The capital stock is $15,000, and the incorporators are: Elizabeth Robertson, Ethel Robertson, F. J. Satterlee, 155 Potomac avenue, Buffalo.

A charter to manufacture baffle wall, baffle plates, boilers, etc., has been granted to the Turner Baffle Wall & Boiler Co., Brooklyn, N. Y., with a capital of $20,000. The incorporators are: Pliny S. Riggs, 176 Broadway; Roy Murchie, 130 Broadway, both of New York; Richard A. Wright, 350 Fulton street, Brooklyn.

The Emerson Engine Co., Inc., Alexandria, Va., has been incorporated with a maximum capital of $100,000; minimum, $50,000. The officers are: Victor J. Emerson, president; Harry E. Jenkins, vice president; A. E. Emerson, secretary and treasurer, all of Alexandria, Va. The company will buy, sell and manufacture engines.

The Clinton Foundry Co., Clinton, Mass., has filed articles of incorporation, with $33,000 capital stok. The officers are: President, Walter A. Stone; treasurer, George C. Stone, clerk and secretary, Gordon A. Brown, all of Clinton, Mass. Attorney, Charles G. Bancroft, 31 State street, Boston. The company will operate a foundry and machine shop.

The Empire Fence Export Co., Ltd., has been organized with $10,000 capital to manufacture wire and wire fencing at Walkerville, Ont. The company is a branch of the Page Wire Fence Co., of the same place, to handle its foreign business, and is under the same control. The provisional directors are Newton Church, Joseph W. Coatsworth and Ralph P. Hall.

The Rothchild Engine Co., New York City, to manufacture machinery and tools, with $10,000 capital stock, has been granted articles of incorporation to manufacture machinery and tools. Those interested are: Frederick Van Wyck, 265 West Seventy-second street; Joseph Rothchild, 623 Wilson avenue, and Charles H. Simmins, 777 Madison avenue, all of New York City.

The Scobey Oxy-Acetilene Co., 188-190 Chapman street, Portland, Ore., has been incorporated for $20,000. J. O'B. Scobey is president and D. G. Scobey, secretary and general manager. The company has built a plant at Portland and expects to erect another at Seattle in the near future. It makes a specialty of autogenous welding.

New Construction:—

Love Bros., Aurora, Ill., have had plans prepared for a one and one-half story brick addition to their foundry, 60 x 247 feet.

J. W. Smith is erecting a machine and forge shop on Quincy avenue and 107th street, Cleveland, of frame construction, 40 x 100 feet, one story.

The Morgan Engineering Co., Alliance, O., has been awarded a contract for cranes for the new plant of the Deforest Sheet Steel Co., of Deforest, O.

Gade Bros. Mfg. Co., Iowa Falls, Ia., gasoline engines, is planning an addition to its engine works, 50 x 200 feet. The new construction will be begun this spring.

P. J. Moran, Salt Lake City, contractor, has taken out a building permit for the erection of a one-story brick fire proof machine shop at 824 South Second street, to cost $8,000.

The Frontier Iron Works, Walter F. Semon, president, 2 Auburn avenue, Buffalo, is planning to erect a brick and steel foundry, machine shop, pattern shop, etc., at Letchworth and Grand streets.

The Kinnear Mfg. Co., Columbus, O., manufacturing steel curtains, shutters, etc., has had plans drawn for an addition 90 x 300 feet, of brick and steel construction. Bids will be asked for shortly.

G. F. Motter's Sons, York, Pa., have begun the foundation construction for a boiler shop, with a frontage on Water street of 86½ feet. The founda-

tion for the malleable iron foundry being erected by the York Mfg. Co. is being placed.

William Horne advises respecting the machine shop he is erecting at Abbeville, La., that the building will be 40 x 60 feet, and power will be furnished by gasoline engines. He has purchased two automatic punches, four drill presses, shaper, lathes, etc., together with complete hand tool equipment.

The Welland Stove Works, Ltd., recently organized, will erect a factory in Welland to manufacture stoves, ranges and heaters for burning gas. They expect to begin manufacturing in June, employing about 50 men. The directorate consists of E. A. Playfair, W. S. Davis, B. J. McCormick, Hugh A. Rose and W. J. Telford.

The Lebanon Steel Casting Co., Lebanon, Pa., has made needed additions and improvements, including an office building, a clearing room, and other additions giving more space, which the increasing business of the company has made imperative. The company turns out principally small castings, the larger percentage of which are automobile castings.

The Vulcan Iron Works, Seattle, Wash., has purchased a new site for its plant having a frontage of 540 feet on Fourth avenue south and 270 feet on Connecticut street. The property is now being filled to datum and as soon as the filling is completed, operations will be commenced on the erection of the new plant. It will consist of the following buildings: foundry, 106x150 feet; supply and jobbing house, 100x270 feet, seven stories high of brick, steel and concrete construction; machine shop 90x150 feet; forge shop, 60x150 feet; pipe and threading shop, 60x60 feet, pattern shop and loft 60x100 feet; structural shops, 76x150 feet. The entire plant will be electrically driven and many compressed air tools will be installed. Sidings from four transcontinental lines will be led into the plant. This concern will be pleased to receive catalogs from manufacturers of foundry equipment, machine tools, forges, as well as catalogs relating to reinforced concrete construction.

General Industrial:—

The Acme Foundry Co., Detroit, has increased its capital stock from $10,000 to $20,000.

The Monolith Steel Co., Inc., a Virginia corporation, has been authorized to do business in Illinois at 164 Dearborn street, Chicago.

The Roanoke Iron Works, Roanoke, Va., has purchased the machine shop business of A. C. Stansill, of Roanoke, and will retain Mr. Stansill's sales force, adding the plant equipment to its own foundry and machine plant.

The Federal Brass Foundry Co., recently organized with Charles L. Kenney of Elkhart, president and treasurer, and George Rush as superintendent, has located at South Bend, Ind. The company has secured a location in the new brick building at 319-321 Hydraulic avenue.

The furnace plant of the Lebanon Reduction Co., at Donaghmore Station, Pa., has been sold to Edgar A. Weimer and H. B. Weaver. Mr. Weimer bought the plant and Mr. Weaver the ore on hand. The plant was originally built to test new methods of reducing iron from various grades of ore.

The Brazil Machine & Foundry Co., Brazil, Ind., has elected the following officers: President, Prentice Tilley; vice president, Lewis McNutt; secretary-treasurer, E. A. Baker; manager, George A. Cocks. Repairs have been begun on the building in Brazil, in which the plant will be located after its removal from Adrian, Mich.

The Malleable Iron Co., Meadville, Pa., at its annual meeting, elected the following board of directors: John E. Reynolds, E. A. Hempstead, Joseph McK. Speer, W. W. Gelvin, H. F. Griele, C. S. Burwell, Otto Kohler, H. C. Beman and L. L. Lord. According to the annual reports read, the company has enjoyed a fair share of business the past year.

These directors of the Keystone Foundry Co., Pottstown, Pa., were elected at the recent annual meeting: James H. Morris, William M. Bunting, John H. Herrick, Nathan Hoffman, Newton Kline, Samuel Z. Schwenk and Hall Morris. The board organized by electing these officers: President, James H. Morris; treasurer, W. M. Bunting; secretary, John H. Herrick.

At the annual meeting of the Adder Machine Co., Kingston, Pa., these directors were elected: A. G. Nesbit, J. C. Qiegand, H. B. Schooley, W. J. Richards, A. L. Williams, Joseph Boyer, Alvin Maculey, E. P. Wenger and E. F. Heller. The directors immediately re-elected the old officers as follows: President, Abram G. Nesbit; vice president, A. L. Williams; secretary-treasurer, H. B. Schooley.

Trade Notes:—

A. C. Stansill, Roanoke, Va., announces that having disposed of his general machinery business to the Roanoke Iron Works, in the future he will represent the Kilbourn & Jacobs Mfg. Co., Columbus, handling that company's car and contractors' equipment department exclusively, with offices at 711 Terry building, Roanoke, Va.

David J. Evans, having resigned as manager of sales for the Rail Joint Co., effective March 1, 1909, will after that date give his personal attention to the office of the president of the Andresen-Evans Co., engineers, ore and coal handling plants, grab buckets, 1501 Monadnock block, Chicago. Mr. Andresen will continue as vice president and chief engineer, and the company will have the benefit of his experience, covering a period of more than 10 years as an engineer in steel mill, railroad and conveying machinery work.

The engineering firm of Burchard & Case, comprising A. Burchard, formerly assistant superintendent of the Westinghouse Electric & Mfg. Co., and F. M. Case, formerly assistant engineer of the American Blower Co., Detroit, has recently been organized and headquarters have been established at 424 Cuyahoga building, Cleveland. While this firm will undertake all lines of work pertaining to mechanical and electrical engineering, a specialty will be made of erecting plants complete, supervising construction work and shop and cost systems.

Fires:—

The damage sustained by the brass foundry of the Leland & Faulconer Mfg. Co., Detroit, in a recent fire, is estimated at $2,500.

The plant of the Cheshire Brass Co., at Millville, Conn., was badly damaged March 9, the loss being placed at $10,000.

The Fort Pitt Forge Co., Penn avenue and Twenty-sixth street, Pittsburg, sustained damage estimated at $6,000, March 10.

The plant of the Topeka Steam Boiler Works, Topeka, Kan., was badly damaged March 2, the loss being estimated by the owner at $100,000, of which $15,000 is covered by insurance.

The Burrell Johnson Iron Co., Yarmouth, N. S., sustained serious damage to its machine shop, engine and boiler house, pattern shop, etc., March 4, the loss being estimated at $80,000, with $45,000 insurance.

TRADE PUBLICATIONS.

MOTOR GENERATORS.—Bulletin 4644 issued by the General Electric Co., Schenectady, describes a motor-generator set for welding, power work, or as a reversible booster for battery service.

STAMPINGS.—The Avery Stamping Co., Cleveland, is distributing a 4-page circular illustrating a number of difficult stampings made by it.

FOR SALE

Plant of the Vulcan Foundry & Machine Co., New Castle, Pa.

MACHINE SHOP TOOLS

72 x 72″ x 21′ Pond planer, 4 heads.
10′ Niles boring mill, 2 heads.
42 x 42″ x 11′ Pond planer.
26″ x 14′ Schumacher & Boye hollow spindle lathe.
20″ x 14′ Flather hollow spindle lathe.
38″ x 20′ New Haven lathe.
48″ Bickford radial drill, back geared.
60″ Prentice radial drill, motor drive.
24″ Prentice upright drill back geared.
Vulcan double spindle miller, 23′ bed.
No. 2 Cincinnati miller.
18″ American crank shaper.
Morton portable slotter.
Vertical keyseater, 18 x 30″ table.

These are fine, modern tools, in good condition. There is also a complete power plant, foundry and pattern shop equipment, traveling and jib cranes, small tools, etc. All ready for immediate shipment, or will sell and hold for future delivery.

WICKES BROTHERS

117 and 119 Fourth Ave. PITTSBURG, PA.

LATHES

84 in. x 40 ft. Putnam
36 in. x 12 ft. Putnam, rod feed
32 in. x 58 in. x 16 ft. rod feed Gap Lathe
29 in. x 9 ft. Pond, rod feed
28 in. blocked to 40 in. x 22 1-2 ft. Pond
28 in. x 14 ft. Bement
26 in. x 14 ft Pratt & Whitney, Taper Attachment
26 in. x 14 ft Betts
24 in. x 13 ft. Bement
24 in. x 18 ft. Bement
24 in. x 9 ft. Pond, rod feed
20 in. x 8 ft. Pond, rod feed
20 in. x 10 ft. Rahn-Carpenter
19 in. x 6 ft. Pond
18 in. x 8 ft. Wood & Light, Screw Cutting
18 in. x 8 ft. Wood & Light, rod feed
18 in. x 10 ft. Rahn & Carpenter
18 in. x 8 ft. " "
17 in. x 6 ft. Prentice
16 in. x 8 ft. and 10 ft. Rahn-Carpenter
16 in. x 6 ft. New Haven
16 in. x 8 ft. Greaves & Klausman
14 in. x 8 ft. G. & M.
15 in. x 6 ft. Sebastian, with Turret Attachment
14 in. x 8 ft. Carroll
14 in. by 6 ft Carroll
All sizes of 14 in. and 12 in. and less in stock.

PLANERS

84 in. x 84 in. x 27 ft. Lowell Mch. Co's, 2 heads
84 in. x 84 in. x 24 ft. Putnam
48 in. x 48 in. x 18 ft. Pond
36 in. x 14 ft. Detrick & Harvey Open Side, 3 heads
37 in. x 33 in. x 10 ft. Bement
36 in. x 36 in. x 17 ft. Sellers
33 in. x 28 in. x 6 ft. Wood & Light
30 in. x 30 in. x 8 ft. Harrington
30 in. x 30 in. x 12 ft. Bement-Miles, 2 heads
18 in. x 18 in. x 3 ft. Unknown Lathe, with vise

SHAPERS

36 in. x 14 ft. Detrick & Harvey open side planer, 3 heads
20 in. x 30 in. Pedrick & Ayer, open side shaper or planer
20 in. Steptoe B. G. shaper
18 in. Ohio 16 in. Ohio
16 in. Cincinnati
13 in. x 22 in. Travelling Head, very heavy built
Crank Planers, complete

SPECIAL

Conardson Turret Lathe
30 in. Bullard Turret Head Mill

FRANK TOOMEY, 127-131 N. Third St., Philadelphia, Pa.

Frogs & Switches

ALSO

LIGHT RAILS, SPLICE BARS, SPIKES & BOLTS, SWITCHSTANDS, RAIL BRACES,

Quick Shipments of Short Orders.

CAR PUSHERS, DERAILERS, HEAVY CHAIN, PLATES 12′ to 36′ CUT TO SKETCH.

CENTRAL TRACK SUPPLY COMPANY, Springfield, O.

FOR SALE

1—48″ x 21′ Putnam Triple Geared Engine Lathe, Used six months.
1—12″ Niles Late Improved Slotter, used three months.
1—42″ x 42″ x 8′ Detrick & Harvey Open Side Planer. Used three months.
1—14″ x 14″ Hall Duplex Belt Driven Compressor, 650 cu. ft. Good condition.
1—10 x 10 x 10 Laidlaw-Dunn-Gordon Compressor. Used six months.
1—40″ Betts Vertical Boring Mill. Fine condition.

WM. WARD MACHINERY CO., 801 House Building, Pittsburg Pa.

FOR SALE

Second-Hand Machinery in Good Condition

Because of the installation of machinery of larger capacity, we have discarded the following machinery and offer it for sale at attractive figures:

1—Wright Twin Engine, 150 H. P.
1—Brown & Sharpe Plain Screw Machine, hole through spindle is 1¼″, turns any length to 6″.
1—Dowel and Rod Machine, Iron Frame, capacity ¼″ to ¾″.
1—No. 6 Sturtevant Blower, 10″ Outlet.
1—No. 11 Buffalo Blower, 16″ Outlet.
1—Champion Blower, 7″ Outlet.
1—Cut-off Saw made by E. & B. Holmes Machinery Co., Buffalo, N. Y.
1—Keyway Machine made by Trevor & Co., Lockport, N. Y.
1—Cut-off Saw made by Connell & Dengler, Rochester, N. Y.
1—2½″ Shaft Cut-off Machine made by Warren, Haskell & Co., Boston, Mass.
1—6 Arm Friction Cut-off Clutch 36″ Diameter for 4″ Shaft.

THE JOHNSTON HARVESTER CO., Batavia, N. Y

Refitted Machine Tools

BORING MACHINES

(2) 30 in. Bullard
(1) 37 in. Bridgeport—(1) head

DRILL PRESSES

(1) 6-spindle Quint turret
(1) 33 in. Bement-Miles

DRILL PRESSES—RADIAL

(1) 24 in. Fosdick, National type

GEAR CUTTERS

(1) Grant-Lees hobbing machine
(1) 20 in. x 8 in. Brainard spur
(1) 36 in. x9 in. x5p Gould & Eberhardt
(2) 50 in. x11 in. x5p Gould & Eberhardt

GRINDERS

(1) No. 2 Brown & Sharpe Universal
(2) Cincinnati cutter and tool
(1) "A" Yankee Drill Grinder
(1) Leland & Faulconer, wet
(1) 12 in. Disc Grinder

HAMMERS

(1) 60 lb. Bradley, cushioned helve

LATHES

(1) 14 in. x 6 ft. Whitcomb-Blaisdell, quick ch'ge gear, turret on sheare
(1) 14 in. x 6 ft. Le Blond, quick change gear
(1) 14 in. x 6 ft. Le Blond, belt feed
(1) 14 in. x 8 ft. Flather
(1) 16 in. x 6 ft. Reed, belt feed, plain rest
(2) 16 in. x 6 ft. Lodge & Shipley quick change gear
(1) 18 in. x 6 ft. Lodge & Shipley, quick change gear
(1) 20 in. x 8 ft. Flather, comp. rest
(1) 48 in. x 10 ft. Lodge & Shipley, quick change gear
(2) 22 in. x 12 ft. Lodge & Shipley, quick change gear
(1) 22 in. x 12 ft. Walcott
(1) 24 in. x 8 ft. Flather
(1) 34 in. x 10 ft. Lodge & Barker
(2) 24 in. x 12 ft. Lodge & Shipley, quick change gear
(1) 24 in. x 16 ft. Lodge & Shipley, quick change gear
(1) 26 in. x 12 ft. Reed
(2) 27 in. x 10 ft. Lodge & Shipley, quick change gear
(1) 27 in. x 14 ft. Lodge & Shipley, quick change gear

LATHES—POLISHING

(2) No. 3 Diamond, 52 x 1 1-4 spindle
(2) No. 7G Diamond, 48 x 1 1-4 spindle

MILLING MACHINES

(1) No. 15 Becker-Brainard Universal
(1) No. 3 Brown & Sharpe Universal
(1) No. 3 Cincinnati, all feeds, plain
(1) No. 4 Cincinnati, all feeds, plain
(1) 42 in. x 24 in. x 8 ft. Ingersoll, slab

PLANERS

(1) 10 in. Bush crank
(1) 20 in. x 20 in. x 4 ft. Wheeler, 1 head
(1) 26 in. x 26 in. x 10 ft. Powell, 2 heads
(1) 36 in. x 36 in. x 10 ft. Gray, 2 heads
(1) 42 in. x 36 in. x 14 ft. Cincinnati, 2 heads

PRESSES

(1) D75 Ferracute
(1) No. 62 Toledo
(1) No. 8 Greenerd arbor

SAWS

(1) 3 1-2 in. Burr
(1) 6 in. Cochrane-Bly
(1) 6 in Newton
(1) Miller-Falls Hack
(1) 26 in. Crescent band

SHAPERS

(1) 14 in. Lodge & Davis
(1) 16 in Gould & Eberhardt
(1) 18 in. Steptoe
(1) 20 in. Hendey
(2) 24 in. Gould & Eberhardt
(1) 24 in Hendey
(1) 24 in. Potter & Johnson
(1) 26 in. Cincinnati, triple geared
(1) 28 in. Hendey
(1) 32 in Gould & Eberhardt
(1) 34 in. Walcott, shifting belt

TURRET LATHES

(1) No. 3 Bardons & Oliver
(1) No. 5 Warner & Swasey
(1) 2 in. x 24 in. Jones & Lamson
(1) 2 in. x 26 in. Pratt & Whitney
(1) 22 in. Bullard "H" machine
(1) 26 in. Universal, chuck fitted

THE MOTCH & MERRYWEATHER MACHINERY CO.

707-715 Lakeside Ave. N. W., Cleveland, Ohio

Detroit Br'ch: 1025 Majestic Bldg. Cincinnati Br'ch: 1014 1st N't'l B'k Bldg

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REBUILT ENGINES and BOILERS

The cleanest and most thoroughly rebuilt.

All our own and in stock. Not scattered everywhere and merely listed.

ENGINES—CORLISS:—20 x 48 Wheelock, 20 x 42 Allis, 18 x 42 Hamilton, 16 x 42 Lane & Bodley, 14 x 36 Lane & Bodley, 14 x 24 Wright, 12 x 30 Allis, etc.

ENGINES—AUTOMATIC:—16 x 32 Buckeye, 15 x 14 Erie, 14¼ x 16 Buckeye, 14½ x 14 Ball & Wood, 13½ x 15 Taylor, 13 x 16 Erie, 12 x 14 Green, 12 x 12 N. Y. Safety, 10 x 10 Fisher, 9½ x 12 Leffel, 8 x 10 Allfree, etc.

ENGINES—THROTTLING:—18 x 24 Erie, 16 x 20 Chandler & Taylor, 16 x 18 Erie, 14 x 24 Atlas, 13 x 16 Chandler & Taylor, 14 x 14 Lewis, Vertical, 10 x 16 Owens, Lane & Dyer, 10 x 12 Industrial, 9 x 12 Ajax, 8 x 12 Climax, 7 x 12 H. S. & G., 6 x 8, Clark, etc.

BOILERS—STATIONARY:—72 x 18 High Pressure, 72 x 18 Standard, 72 x 16, 66 x 16, 60 x 20, 60 x 16, 54 x 16, 54 x 14, 54 x 12, 48 x 16, 48 x 14, 44 x 14, 40 x 12, 40 x 9, 36 x 16, 36 x 10, etc.

BOILERS—FIRE BOX:—80, 60, 50, 40, 35, 30, 25, 20, 16, 12, 10 and 8 H. P., etc.

BOILERS—VERTICAL:—50, 40, 35, 30, 25, 20, 16, 12, 10, 8, 5 and 3 H. P., etc.

HEATERS:—All sizes, Open and Closed.

PUMPS:—All sizes, Single and Duplex.

LATHES:—17 x 8 Lodge & Barker; 60″ Stevens Pulley.

PLANER:—32 x 30 x 10 ft. New Haven, Single Head.

MILLER:—DUPLEX BRASS MILLER.

TOOL GRINDER:—Springfield.

SAW MILLS, LATH MILLS, EDGERS, CUT-OFF SAWS, TANKS, BLOWERS, EXHAUSTERS, etc. Write for list.

Also full assortment of new machinery.

Sole manufacturers of the celebrated **"LEADER" INJECTORS** and **JET PUMPS.** Send for circular.

THE RANDLE MACHINERY CO.

1747 Powers St.

CINCINNATI, OHIO

CLASSIFIED ADVERTISING SERVICE

Advertisements for "Positions Wanted" and "Positions Vacant" inserted at the rate of 50 cents for 50 words or less, additional words 2 cents each. All other advertisements under classified headings 15 cents a line for each insertion.

POSITIONS WANTED.

MALLEABLE FOUNDRY WANTS FOREman capable of handling 200 molders on medium and heavy work. Foundry uses molding machines and is strictly up-to-date. Position will prove desirable to the right party. State fully experience and age. All correspondence confidential. Address Acme Steel & Malleable Iron Works, Buffalo, N. Y.

FOUNDRY FOREMEN AND OTHERS wanted to increase their earning capacity 25 to 50 per cent by taking a course in the mixing of irons with the Milwaukee Correspondence Schools, Goldsmith Bldg., Milwaukee, Wis.

ROLLERS AND ROUGHERS WANTED to work on a 10-inch mill. Must be active, sober and industrious men of 30 to 40 years of age. Must furnish satisfactory references with application. Address Falls Hollow Staybolt Co., Cuyahoga Falls, O.

WOOD AND METAL PATTERN MAKER wanted to take charge of small room in malleable foundry. Must be competent to read blue prints correctly. Address Box 431, THE IRON TRADE REVIEW, Cleveland, O.

POSITIONS WANTED

POSITION WANTED BY FIRST-CLASS foundry foreman, held present position for 10 years, would like a change; 20 years' experience as foreman on all classes of light and heavy engine work, and mining machinery of all kinds. Good mixer and melter of both iron and brass. Will take charge of pattern shop in connection with foundry if so desired. Best of references as to ability; an up-to-date hustler, sober and reliable; can produce results; shop in middle west or coast preferred. Address Box 61, PENTON'S LIST, Cleveland, Ohio. p.

BY BLACKSMITH FOREMAN, FIRST class all around, thorough knowledge of forging, machine tool, tempering, and hardening. American, age 30, married. Capable of doing things and handling of men. Best of references, now employed. Reason for change, ambition. Can make working drawings from blue prints. Will consider either foremanship or working foreman. Do you want results? Address E. O. D., THE IRON TRADE REVIEW, Cleveland, O.

POSITION WANTED AS ASSISTANT general manager of manufacturing concern, thoroughly versed in modern office and correspondence details, as well as shop practice. Have been with present company eight years, technical graduate, desire change for personal reasons. Reference furnished from present employer as well as others, further details furnished on request. Address Box 64, PENTON'S LIST, Cleveland, O. p.

YOUNG MAN (26) WITH CLEAN RECord and five successful years in engineering, sales and business lines, open for responsible position in operating department of manufacturing concern, college graduate, at present employed. Address Box 403, THE IRON TRADE REVIEW, Cleveland, O.

PRACTICAL MOLDER OF 21 YEARS' experience, seven years as foundry foreman in all its branches, married man, with family, 33 years of age, would like to make a change, middle west preferred. At present employed as foundry foreman, 2½ years with present concern. First-class references. Address Box 73, PENTON'S LIST, Cleveland, O. p.

PRACTICAL STEEL FOUNDRYMAN wants position as superintendent or foreman. At present employed. Well able to estimate and dictate on all foundry practice. Address Steel Foundryman, 510 Park bldg., Pittsburg, Pa.

A MACHINERY SALESMAN, ESTABlished in Boston with desirable office, acquaintance and reputation, wants to correspond with manufacturers open to agency negotiations. Any reasonable basis considered, but only with concerns of standing offering goods of real merit. Address Box 425, THE IRON TRADE REVIEW, Cleveland, Ohio.

BLAST FURNACE SUPERINTENDENT or manager, energetic, experienced, up-to-date. At present engaged, but open for early engagement. Can make old plants produce satisfactory results. Medium sized or large furnaces. Mechanically, or hand filled, merchant or steel works product. Address "Capable," care THE IRON TRADE REVIEW, Cleveland, O.

BY PRACTICAL FOUNDRYMAN WITH a thorough knowledge of crucible steel castings, making the furnace molding mixing. Have a special oil furnace of my own. Address Box 430, THE IRON TRADE REVIEW, Cleveland, Ohio.

BLAST FURNACE ASSISTANT MANAger at present employed, desires a better position. Address replies to Box 426, THE IRON TRADE REVIEW, Cleveland, Ohio.

POSITION WANTED AS SUPERINTENDent by a man who can handle men; has had experience in factory system and detail; is a producer and a technical graduate. Best of references. Address Box 63, PENTON'S LIST, Cleveland, O. p.

POSITION WANTED AS FOREMAN BY young man, 17 years' experience at the trade on loam, dry and green sand; familiar with cupola practice. Address Box 60, PENTON'S LIST, Cleveland, O. p.

BUSINESS OPPORTUNITIES.

STRICTLY MODERN GRAY IRON FOUNdry for sale, completely equipped and in daily operation on profitable machinery work. Located in Michigan town with excellent shipping facilities. Best of reasons for selling and will make liberal terms. Full information cheerfully furnished. Address Box 338, THE IRON TRADE REVIEW, Cleveland, O.

GRAY IRON FOUNDRIES. WRITE ME if you want to add to your business a patented specialty that is a winner. Enormous sale and pleasing profits. Royalty contracts preferred in all unoccupied territory. Address F. E. Miller, 109 Pa Ave., Lansing, Mich.

WANTED TO RENT, LEASE OR SELL a modern up-to-date well equipped foundry building, with flasks and all equipment for starting immediately; capacity over one hundred molders. Address "Foundry," care of THE IRON TRADE REVIEW, Cleveland, O.

ENGINE FOR SALE.

FOR SALE AT A BARGAIN, ONE 30 H. P. double steam engine and 40 H. P. boiler, also two portable steam boilers, one 10 horse, one 12 horse, locomotive style, suitable for heating small buildings. For particulars and price inquire of H. A. Keen, North McGregor, Ia. p.

FOR SALE: FIVE MILES 35-LB. RElaying rails. One Atlas-Corliss engine, 600 H. P. One 50-ton Bucyrus steam shovel. Locomotive and tubular boilers, all sizes, and all kinds of machinery. We make a specialty of handling wire cable up to 1¼" No. 1 second-hand condition. Your correspondence we solicit. Lake Superior Iron & Metal Co., Hancock, Mich. p.

FOR SALE—ONE 23 X 60 SINGLE CYLinder, double acting, Harris Corliss, pendulum ball governor, with section cast iron fly wheel, 18 ft. x 38". Good order, requirements changed, electric power being used. Address Almond Mfg. Co., Ashburnham, Mass. p.

FURNACE FOR SALE.

ONE NO. 4 CASE HARDENING FURnace for sale, manufactured by the American Gas Furnace Co., of Elizabeth, N. J. The furnace has never been used. Address A. L. Sanger, Purchasing Agent, the C., H. & D., Cincinnati, O. p.

WASHERS "SPECIAL SIZES."

In any quantity, metal or fibre. Dies, Stamping and Screw Machine Work. Quadriga Mfg. Co., 18 So. Canal St., Chicago, Ill. p.

FOR SALE, MISCELLANEOUS.

THE E. E. JOSEF MFG. CO., BUFFALO, N. Y., manufacturers of the Josef Patent Universal Clamps, for molders, carpenters, cabinet makers, pattern makers, concrete makerc, etc., strong, light, durable and cheap; also manufacturers of the Buffalo Universal Handy Bench Clamp—essential to the equipment of any set of tools. Send for literature. p.

WE MANUFACTURE THE BEST VERtical boiler on the market. It has no small tubes to give constant annoyance, and we guarantee it to be a better steamer than any vertical tubular, and more economical in fuel. John Vanes Boiler Works, Brazil, Ind. p.

ONE NEW NO. 3 MESTA LEVER SHEAR never used, Pitman type, 18" knives, right hand belt driven, capacity to shear 3" squares, 3½" rounds, flats up to 10" x 1¼", with an occasional overload of 25 per cent. Weight about 36,000 pounds. Price $1,500, f. o. b. cars Rockaway, N. J. Address Rockaway Rolling Mill, Rockaway, N. J.

FOR SALE, THE PATENTS, TOGETHER with complete drawings, patterns, jigs and templates for the best molding machine in the market today. A most marvellous foundry cost reducer. Will dispose of the entire business at a price especially attractive. For full particulars address The Bryan Vacuum Molding Machine Co., Buffalo, N. Y. p.

FOR SALE—THREE 25 H. P. SLIDE valve engines, in first-class order, one 90 H. P. Russell Automatic Engine; One Pope Toledo Steam Run-about, cheap. Address Wendell Ruof, Knoxville, Tenn. p.

FOR SALE CHEAP, ONE 4" POWER pipe machine. One power hack saw, one 30", 36" planer, 10-ft. bed. St. Cloud Iron Works Co., St. Cloud, Minn. p.

FOR SALE: TABOR VIBRATOR MOLDing machine, 7" power rammer, cost $290. Make us an offer. Chicago Hardware Foundry Co., North Chicago, Ill. p.

SCRAP WANTED.

TAKE NOTICE. WE ARE BUYERS OF all grades of scrap metals, such as scrap copper, brass, lead, babbitt metals, factory metal skimmings, drosses, metal clippings, spelter, etc. Advise quality and quantity you have on hand to offer and we will name best prices f. o. b. your city. H. Kander & Co., Bowling Green, Ohio.

WORK WANTED

LATHE, PLANER AND MILLING MAchine work, gear cutting, etc., solicited; or machines to build complete by a shop making high grade machine tools. Estimates furnished. J. F. Bowman, Box 4, Station B, Cincinnati, O.

WANTED, MISCELLANEOUS.

VALVE MILLING OR SQUARING MAchine wanted. Anyone having a good first-class two-spindle machine of that kind for sale at reasonable price, kindly communicate with Miller-Hubbard Mfg. Co., Sturgis, Mich. p.

WANTED, SECOND-HAND MACHINERY, to be in first-class condition. One single rotary planer, cutting head 48" or larger; cutting head to travel not less than 8'. One horizontal bending or straightening machine to take 24" beams. One L bar shear machine on turntable, for 6 x 6 angles, or larger. One boring or turning mill, 72" to 84" swing; two heads preferred. State particulars, conditions, etc., for best cash prices. Address Box 67, PENTON'S LIST, Cleveland, O. p.

WANTED, AN 85 TO 100 H. P. ENGINE for belt connection to 55 K. W. generator that will work in a space of 6 to 8 ft. in width and 10 to 15 ft. in length—a Russell, Buckeye or Ideal preferred. L. H. Shepherd Milling Co., Charlottte, Mich. p.